ISSUE 188 DEC./JAN. 2008/2009

Better Homes and Gardens®

WOOD®

TOP NEW TOOLS for 2009! p.29

Build a Shaker-Style Dresser

(Super-simple Drawers!)

Great Holiday Gift Projects!

- Countertop Wine Rack p.62
- Wall-hung Mirror p.66
- Coffee Table, End Table, Sofa Table p.54

Cut No-goof Dovetails p.24

THE Secret to Airtight Dadoes p.16

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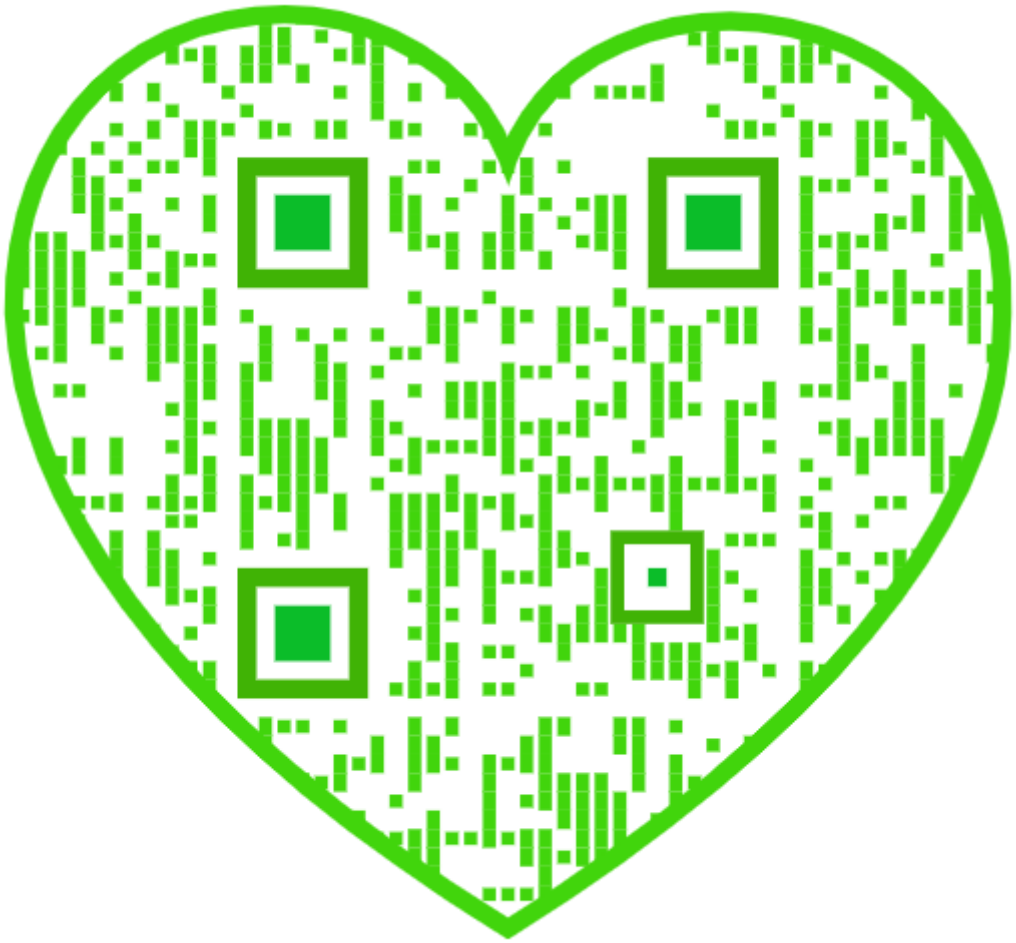

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12½" Portable Planer

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- Top mounted return roller
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- Approx. shipping weight: 66 lbs.

Double Sided Blades

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G0663
REG. ~~$239.50~~
SALE $199.95

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- Sanding motor: 1½ HP, 110V, single-phase
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- Drum surface speed: 2300 FPM
- Max. stock dimensions: 12" wide x 3½" thick
- Min. stock length: 8"
- Sanding drum size: 4"
- Sanding belt: 3" hook & loop
- Approx. shipping weight: 160 lbs.

Side Handles for Portability!

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G0459 REG. ~~$650.00~~ SALE $525.00

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8" x 75" Jointer

- Motor: 2 HP, 110V/220V, single-phase, TEFC, 3450 RPM
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- Cutterhead knives: 4 HSS, 8" x ¾" x 1/8"
- Cutterhead speed: 5500 RPM
- Cutterhead dia.: 3"
- Max. depth of cut: 1/8"
- Max. rabbeting depth: ½"
- Approx. shipping weight: 558 lbs.

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8" x 75" Jointer *w/Spiral Cutterhead*

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- Precision ground cast iron table size: 9¼" x 75"
- Deluxe cast iron fence size: 38"L x 1¼"W x 4"H
- Cutterhead speed: 5500 RPM
- Cutterhead dia.: 3"
- Max. depth of cut: 1/8"
- Approx. shipping weight: 558 lbs.

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MADE IN ISO 9001 FACTORY!

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G0593
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- Arbor: 5/8" (accepts dado blades up to 13/16")
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- Max. depth of cut: 3" @ 90°, 2⅛" @ 45°
- Approx. shipping weight: 532 lbs.

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w/Spiral Cutterhead

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- Max. cutting height: 6⅛"
- Max. cutting depth: 1/8"
- Feed rate: 16 & 20 FPM
- Cutterhead speed: 5000 RPM
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- Approx. shipping weight: 640 lbs.

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- Max. profile width: 6 3/4"
- Max. stock thickness: 7 1/4"
- Min. stock thickness: 1/4"
- Min. stock length: 9"
- Feed rate: 14 FPM
- Cutterhead speed: 7000 RPM
- Approx. shipping weight: 243 lbs.

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Planer Knives, Stand and 2 HP Motor Included!

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2 YEAR WARRANTY

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H8152	V/S kit for existing owners of G0552 Reg. ~~$325.00~~	$295.00
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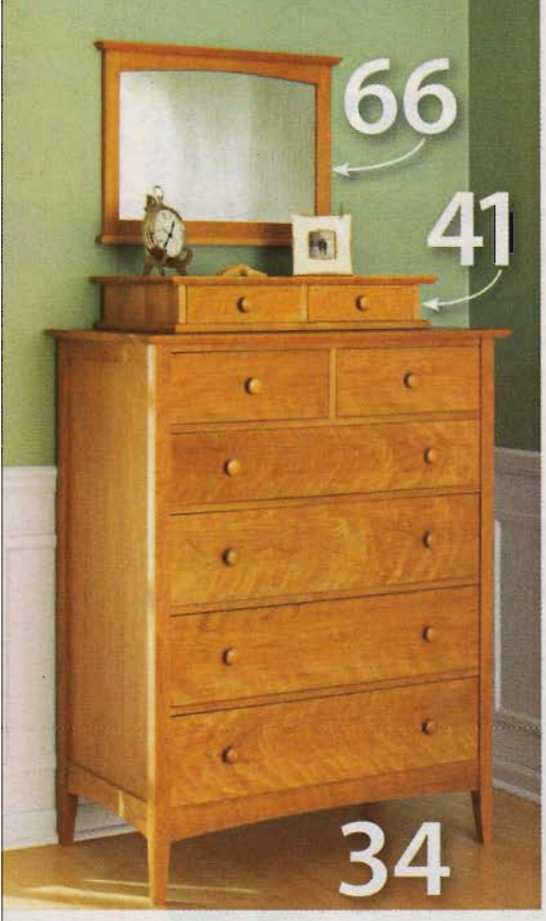
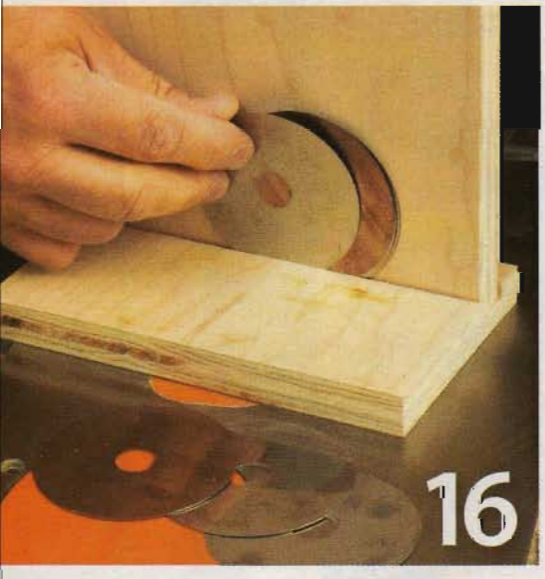
in this issue





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These pieces complement the bedroom suite that began in the previous issue.

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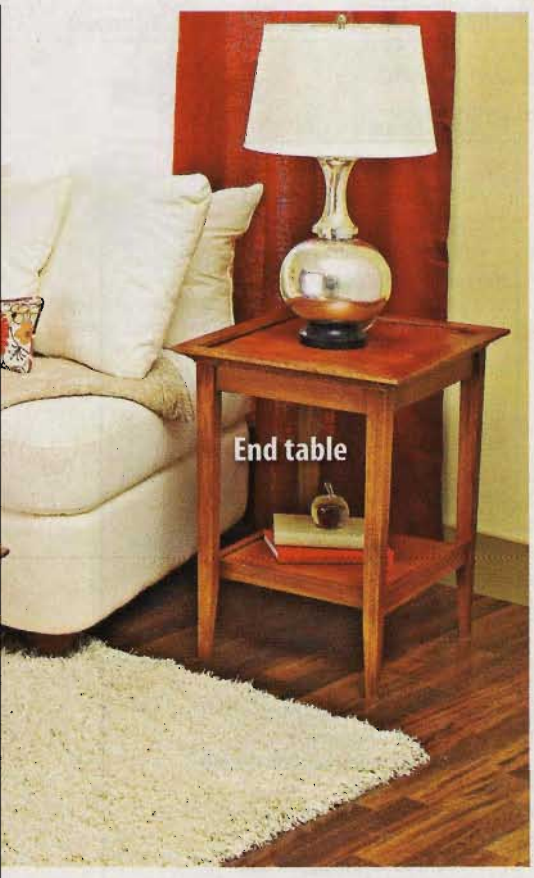
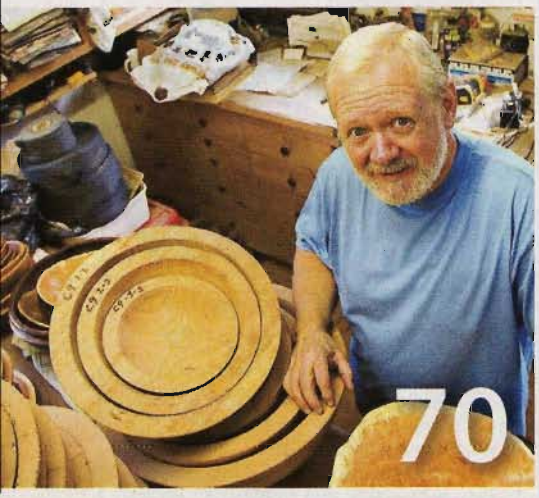
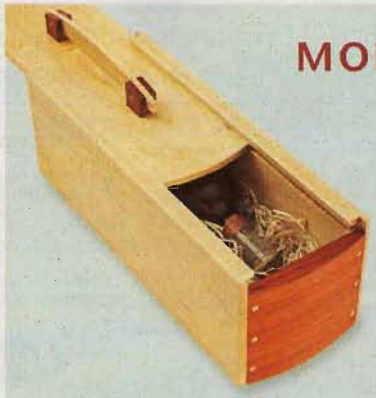
This seal is your assurance that we build every project, verify every fact, and test every reviewed tool in our workshop to guarantee your success and complete satisfaction.





on the web

woodmagazine.com



MORE GREAT GIFTS ONLINE

Looking for something special to build for your holiday gifting? You'll find dozens of ideas for all ages and tastes at woodmagazine.com/gifts.

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Got a stumper? Don't stew about it—ask for help on the WOOD Online® forums. When you post your question at woodmagazine.com/forums, it's like having 100,000 experts at your fingertips.

How to handle large cases?	Allen O.	7	1 minute ago by allenworsham
what would you do?	smbwood58	9	16 minutes ago by grandpabear
Jewelry Box Joinery - Need to draw on your experience	Michael the Fledgling	4	20 minutes ago by grandpabear
A little help for a novice please	rnchrisdp	21	40 minutes ago by Gary K.

The question...

Your username here...

The number of replies...

Most recent reply

MAKE A DOOR, WIN A TRIP TO VENICE!

Build an interior door, snap a few photos, and e-mail them to us for your chance to win! You'll find free video tips on doormaking, plus complete contest entry details and rules at woodmagazine.com/door.

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- 1 HP, 110V/220V, single-phase, TEFC motor
- 14" square precision ground cast iron table
- 6" max. cutting height
- 2 blade speeds: 1500 & 3200 RPM
- Cast iron wheels
- Ball bearing blade guides

Includes blade, fence and miter gauge

W1706

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- 2 HP, 110V/220V, single-phase motor
- Precision ground cast iron table w/ wings measures 39½" x 27"
- Shop Fox® Alumina-Classic® Fence
- Cutting capacity: 3" @ 90°, 2⅛" @ 45°
- Rip capacity: 30" ➤ Arbor: ⅝"

New

Includes both standard and dado inserts

W1748

6" JOINTER

w/Parallelogram Adjustable Beds

- 1½ HP, 110V, single-phase motor
- Precision ground cast iron table measures 55½" x 6"
- 4 knife, 4850 RPM cutterhead
- Rabbeting capacity: ½"
- Quick adjust levers
- Top mounted switch

New

Built-in Mobile Base

W1755

SHOP FOX®

5 HP CYCLONE DUST COLLECTOR

- 5 HP, 220V, single-phase, TEFC Class "F" motor
- 10" intake hole
- 0.2 - 2 micron filters
- Magnetic switch w/remote control
- Noise reducing mufflers
- 55 gal. steel collection drum

New

Includes steel stand and detailed instruction manual

W1810

12" TABLE SAW

w/Riving Knife & Extension Table

- 5 HP, 220V, single-phase motor
- Precision ground cast iron table & trunnions
- Table w/extension measures 30¾" x 78¾"
- Quick release riving knife & steel splitter
- Digital bevel angle readout

New

W1762

Includes 12" blade, fence and miter gauge

20" PLANER

w/Mobile Base - 5HP

- 5 HP, 220V, single-phase motor
- Precision ground cast iron table & extension wings
- Table w/wings attached measures 20" x 55⅝"
- 2 feed speeds: 16 FPM & 20 FPM
- 4 knife, 5000 RPM cutterhead
- Pedestal mounted magnetic safety switch

New

Built-in locking Mobile Base

W1754

SHOP FOX®

STRAIGHT LINE RIP SAW

- 15 HP, 220V/440V*, 3-phase cutting motor
- 2 HP, 220V/440V*, 3-phase feed motor
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- 18" throat for large stock
- 8" min. cutting length (w/ included hold-down kit)
- Built-in auto-lube system for easy maintenance

New

*440V operation requires the purchase of a 440V thermal relay & magnetic contactor

W1803

Shown with optional D3698 Laser Guide w/Pedestal Mount

14" SLIDING TABLE SAW

- 10 HP, 220V/440V*, 3-phase main motor
- 1 HP, 220V/440V*, 3-phase scoring motor
- 125" W x 126" L cutting capacity
- Micro adjustable rip w/2 fence stops
- Integrated overhead dust collection
- Delivers 10½' of travel

Features Riving Knife and Scoring Blade

New

W1806

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Also Available: D3699 Optional Fully Enclosed Blade Guard

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- Precise dial angle scale for spindle tilt
- 4 spindle speeds: 3900, 5000, 7200 & 9400 RPM
- Front mounted spindle lock

*440V operation requires the purchase of a 440V thermal relay & magnetic contactor

New

W1807

Includes a 3-pc. table insert, heavy-duty miter gauge and 7 spindle spacers

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December/January 2008/2009 Vol. 25, No. 7 Issue No. 188

Marlen enjoys turning small hollow vessels. These measure less than 4" wide.

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Bob demonstrates the tool stand he built from plans in issue 182.

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Mark built this kitchen island for his daughter's condo.

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In Memoriam — E.T. Meredith III (1933–2003)

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2008-2009 Show Schedule

York, PA
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Novi, MI
Rock Financial Showplace
November 21-23, 2008

West Springfield, MA
Eastern States Exposition
January 9-11, 2009

Show Hours
Friday 3pm-9pm
Saturday 10am-5pm
Sunday 10am-3pm

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For complete details about each show, or to receive show discounts, call **toll-free 866-749-4988**, or visit:
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Can't make the shows? At the beginning of 2009 WOODMagazine.com will have online videos of the most popular seminars. Stay tuned for more details.

At each show, make sure to stop by the SawDust Cafe®, sponsored by *WOOD*® Magazine.
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WOOD MAGAZINE

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Editor's Angle

Back by popular demand!

Annual Article Index

Now you have two simple ways to find a past project, tool review, or woodworking technique article: the cumulative online index at woodmagazine.com and the printed annual index on *page 45*.

Back in the November 2007 issue I touted the numerous benefits of the *WOOD*® magazine online index (woodmagazine.com/index). Among the bennies: It's cumulative (going back to issue 1 more than 20 years ago!) and comprehensive (right up through the issue in your hands). You simply punch in a word to describe what you're looking for, click on "search," and presto, up pops any number of articles matching that word. Clearly superior, right? Not necessarily.

Pretty soon I heard from a lot of you that preferred the paper version we used to include in the magazine every year. Well, we never ignore our customers, so we set about breathing new life into this old concept.

I put the project in the capable hands of Margaret Closner, our Production/Office Manager. In addition to keeping our creative band of woodworking editors and craftsmen on schedule and generally organized, Margaret has an uncanny recall of past articles—a skill honed from fielding thousands of reader inquiries over the years. She put that talent to work and soon came up with an index designed to help you find the article or shop tip you're looking for as quickly as possible.

Next, we decided the index had to be on durable paper that you can remove from the magazine easily, so we printed it on the heavy stock in the center of the magazine usually reserved for project patterns. To accomplish that, we moved the full-size pattern for the wine rack on *page 62* into the body of that article. The *WOOD* Patterns® insert will return next issue.

And here's a feature I think you'll really appreciate. We left room in the index margins for punching holes so you can store it (and subsequent ones) in a three-ring binder for easy retrieval, as shown *below*.

On the back page of the index you'll find quick tips for using it, as well as the online index (in case you want to search issues prior to 2008). We've published great projects for nearly 25 years, with no two projects exactly alike. I'm always amazed when I look back at the huge archive of past work.

Finally, let me assure you that, despite all of the benefits of the Internet, we plan to continue to publish an annual paper version of the index into the foreseeable future. You've been pretty clear about wanting it, and we hear you!

Bill Krier

3 EASY STEPS TO STORING YOUR INDEX

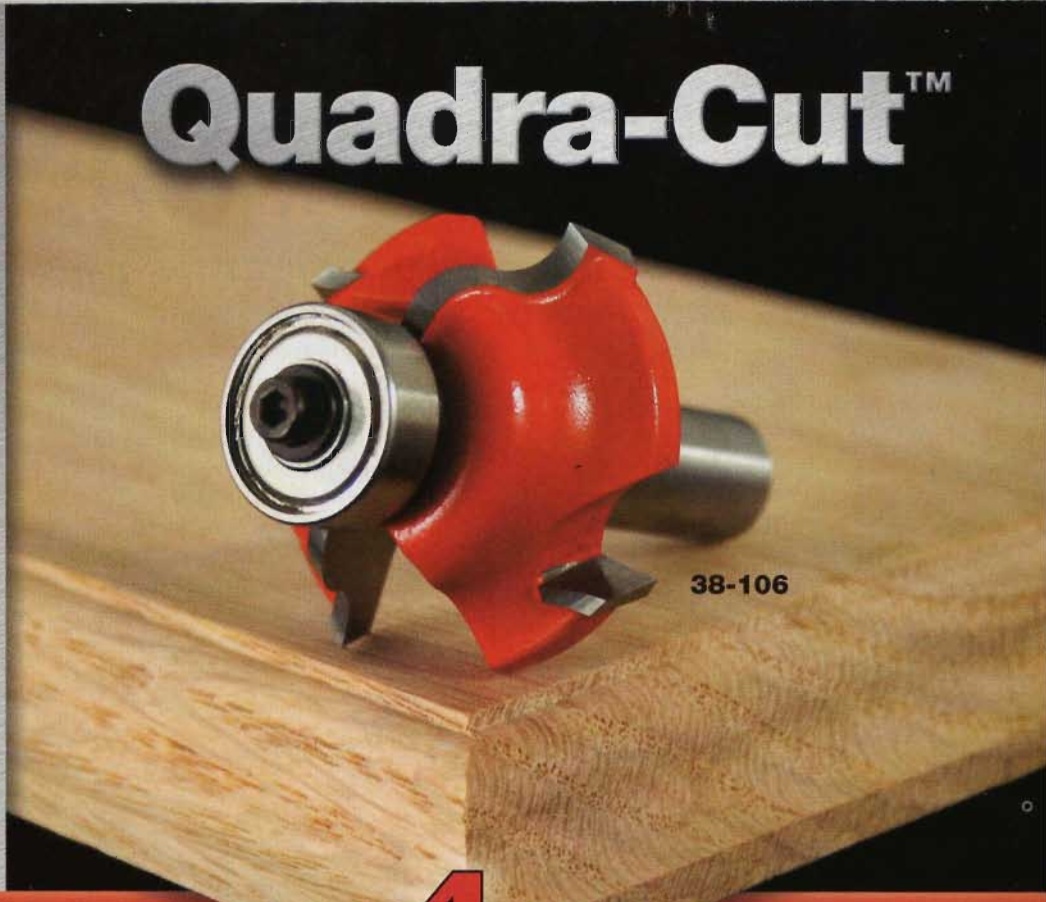
STEP 1: Carefully pull index insert from magazine.

STEP 2: Punch 3 holes where shown on the index.

STEP 3: Place index in a three-ring binder for quick access.

What's The Secret To Flawless Edge Profiles With NO REWORK?

Quadra-Cut™

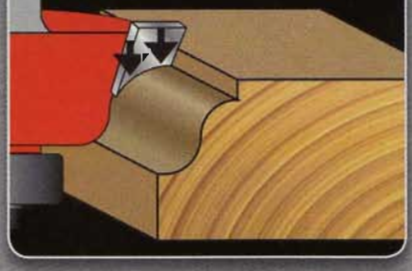


Freud's New Quadra-Cut™ 4 Cutter Design

How It Works!

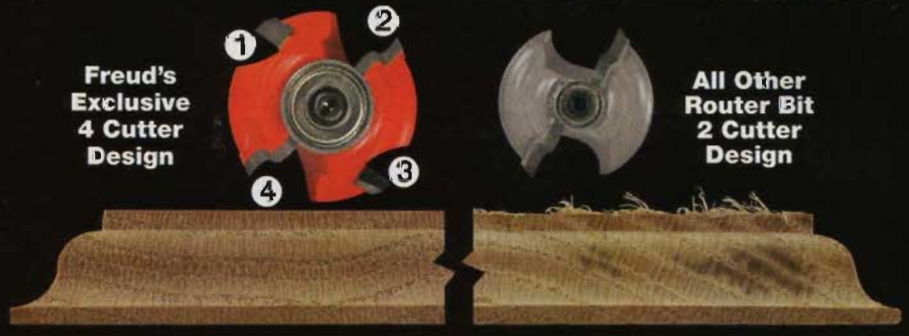
Two large cutter wings shear upward to remove most of the stock for fast, extremely smooth cuts.

Two small cutter wings shear downward for an ultra-fine finish, even when routing crossgrain in delicate materials!



U.S. Patent No. 8,899,252

For A Smooth Sanded Finish... ...Without The Rework!



"Mirror-smooth finish with sharp, clean details!"
– Chris Marshall, Woodworker's Journal

"Super-smooth cuts!"
– Glen Huey, Popular Woodworking

Look For These Popular Profiles in 1/2" Shank Quadra-Cut™ Design:

- Classical Cove & Round Bit
- Rounding Over Bit, 3/8" Radius
- Rounding Over Bit, 1/2" Radius
- Rounding Over Bit, 1" Radius
- Beading Bit, 5/16" Radius
- Beading Bit, 1-1/8" Radius
- Table Top Classical Bold Bit
- Table Edge Bit
- Rounding Over Bit, 5/8" Radius
- Rounding Over Bit, 1-1/2" Radius
- Raised Panel Bits

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Sounding Board

Our bulletin board for letters, comments, and timely updates

Teacher takes home WOOD® magazine prize with stunning bedroom table

At the 2008 Design in Wood competition in San Diego, Brian Carnett's Asian-influenced bedside table, shown at *right*, won the Excellence in Workmanship award, sponsored by *WOOD* magazine. A former woodworking instructor, Brian, 55, now teaches high-school photography and social studies near his Escondido, Calif., home. He builds furniture in his spare time.

Brian made the 14×14×30" table from wenge, quilted maple, and ebony, using through-tenons and breadboard ends for joinery. His table also netted a second place for Excellence in Finishing. (He used an oil/polyurethane mix.)

The San Diego Fine Woodworkers Association sponsors the Design In Wood competition each summer. This year, 302 entries from 15 states competed for prizes valued at more than $20,000. To see more photos from the show and to enter the 2009 event, go to sdfwa.org.

Avoid sawing steel with a wood-cutting bandsaw

In your review of 14" bandsaws in issue 185 (September 2008), you mentioned cutting steel with a dual-speed machine using the proper blade. I would warn your readers against that for a few reasons.

First, the blade speed—measured in feet per minute (fpm)—of our wood-cutting bandsaws is much too fast for cutting steel. (Typically, a steel-cutting bandsaw runs at 75 to 300 fpm, while a wood-cutting bandsaw runs 1,500 to 3,200 fpm. You can safely cut nonferrous metals, such as brass or aluminum, at the slower speed.) The heat generated when cutting steel at those faster speeds would quickly damage the teeth on even a steel-cutting blade.

Also, most steel-cutting blades are designed to run at much higher tension settings than typically used in woodworking bandsaws. Finally, the metal chips could become pressed into the rubber tires, thus reducing their life (unless they have been designed for it).

—Bill Crofutt, Grizzly Industrial

Some bandsaws, such as Grizzly's G0621, are built to cut wood and metal. This model has a 150- to 3,000-fpm speed range.

I'll take my sheet goods to go, please

I built a sheet-goods storage rack similar to the one in issue 184 (July 2008), but didn't want to simply park it against a wall. So I added 6" swiveling casters to make it mobile, and extended the width to add clamp racks, sawhorse holders, and a bin for storing small cutoffs. Now I've got everything I need within easy reach. When I'm finished, I just scoot them out of the way.

—Mark Abbott, Cookeville, Tenn.

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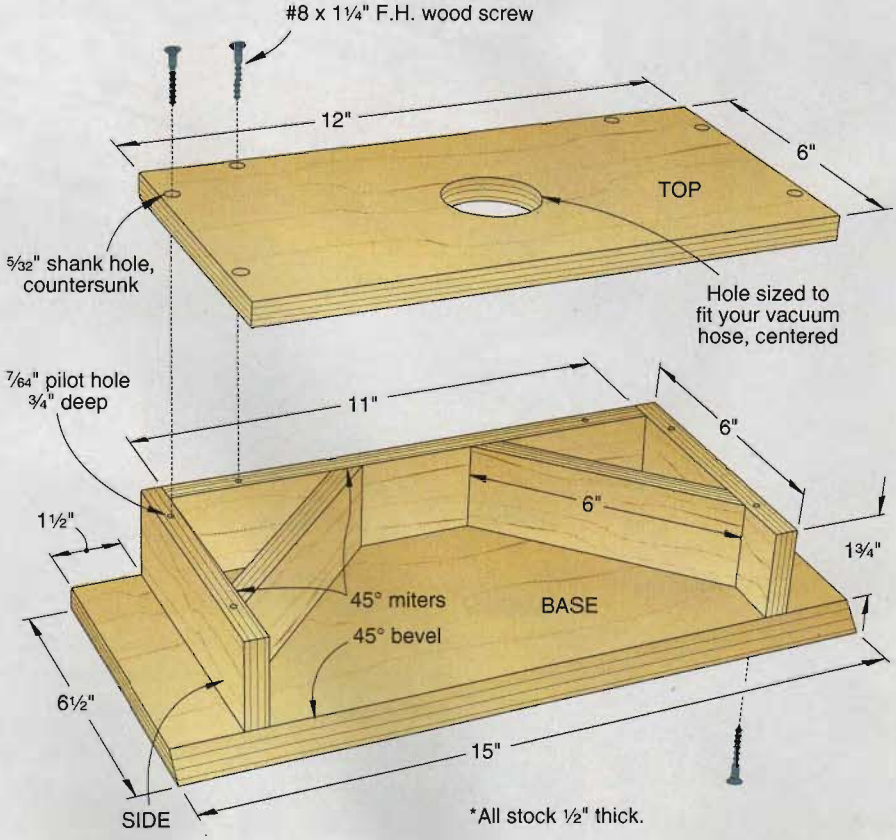
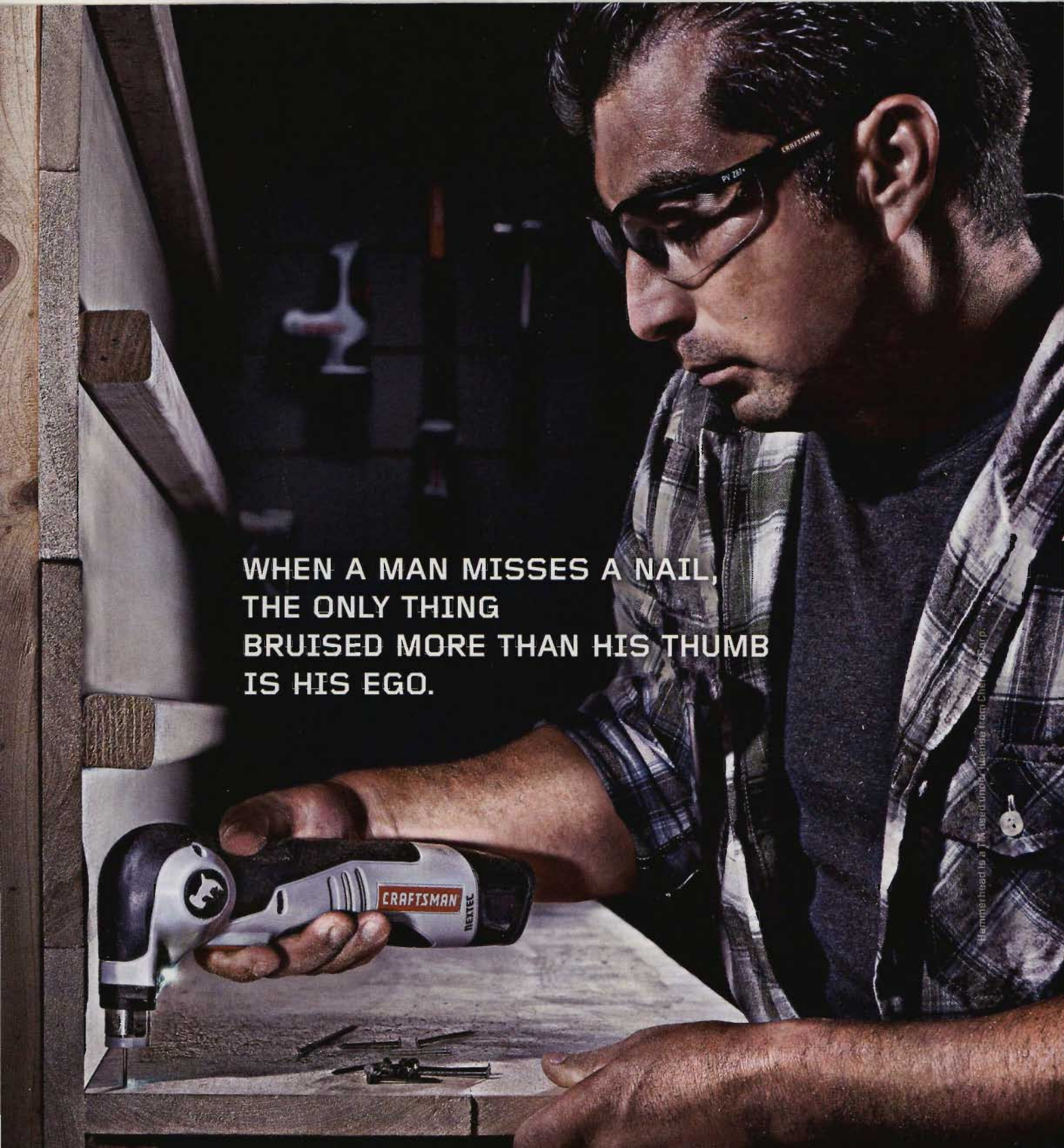
Great Ideas for Your Shop

Dual-purpose Dust Chute

We all like making dust in the shop, but nobody likes cleaning up afterward. Here's a handy helper that both speeds sweep-up and keeps chips and dust off the floor and workbench. Build this simple project using ½" scrap. Cut a hole in the top to fit your vacuum hose or add the optional collar for a dust-collection hose. Create the base so the ends protrude 1½" beyond the edges of the sides to clamp it to your workbench. Then, bevel the front edge of the base for ease in sweeping debris into it for easy pick up.

Project design: **Paul Amberg**





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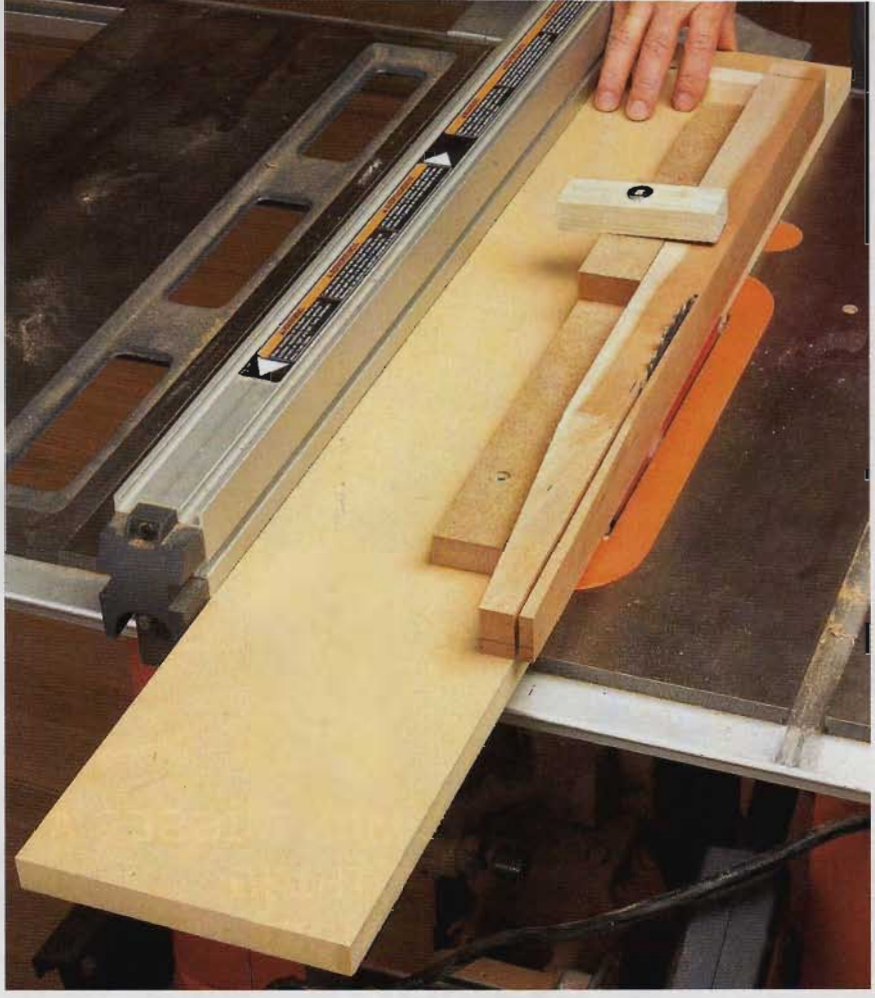
THERE'S A CRAFTSMAN IN ALL OF US

Quick & Easy Jig

Super-simple Tapering Jig

Tapers turn bulky, blocky stumps into svelte and sexy legs. Start cutting the fat with a trip to the scrap bin.



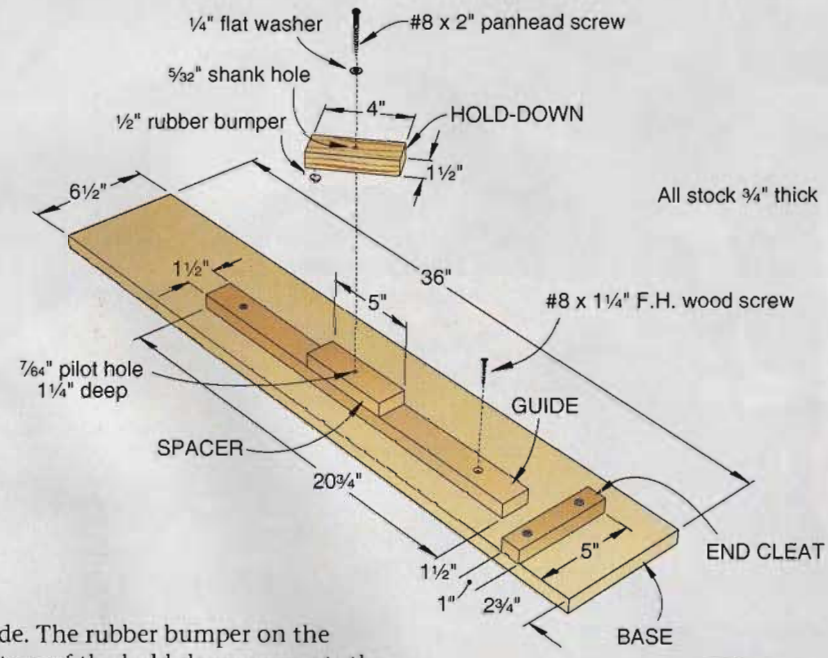
In the last issue (#187, November 2008, p. 32), we provided plans for an adjustable tapering jig. It works great for cutting an infinite variety of tapers, including those on the Basic-Built Tables on *page 54*. But if you want a simpler tapering jig to build that same table set—one that doesn't require any special hardware—try this one. It's not quite as versatile, but perfect if you value simplicity in your jig.

Start by cutting the base, guide, end cleat, and spacer from ¾" MDF or plywood to the sizes shown in the drawing. Make the hold-down from any piece of scrap. (We had ¾" poplar in the cutoffs bin.)

Glue and screw the end cleat to the base. Then glue the spacer to the guide, but don't attach this assembly to the base yet. Its position depends on the taper to be cut.

Before completing the jig, use it to set up the tablesaw for the cut. First, install a zero-clearance insert so the cutoff won't lodge between the blade and insert plate. (For more about making and using a zero-clearance insert, go to woodmagazine.com/zeroclearance or woodmagazine.com/zcivideo.) Next, place the edge of the base against the saw blade, then slide the rip fence against the opposite edge of the base.

To use the jig, place one of the legs on the base with the top against the end cleat and the taper marks on the ends of the leg along the edge of the jig, as shown in the photo. Place the guide/spacer assembly against the leg, drill the mounting holes, and screw the guide assembly to the base. (Don't glue it so you can reposition it to cut tapers of different lengths.) Retrieve the hold-down and screw it to the spacer to hold the leg firmly against the base and guide. The rubber bumper on the bottom of the hold-down prevents the leg from slipping.



To cut a taper, turn on the tablesaw and push the jig and leg past the back of the blade. Use an outfeed support to keep the jig and leg from falling at the end of the cut.

Note: *We've removed the blade guard to show you the operation. Use yours.*

Watch a FREE video on cutting leg tapers with this jig at: woodmagazine.com/taperjig2

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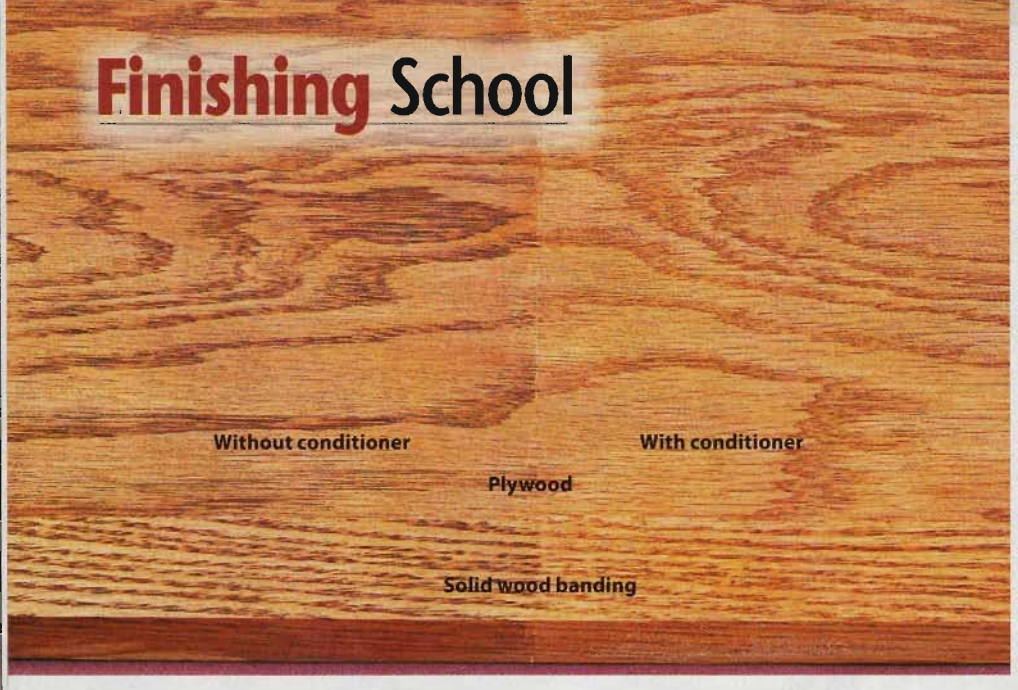


Wood conditioner on the right side reduces the color contrast between porous and less-porous surfaces, helping the edge band blend with the plywood veneer.

Blending Banding

Plywood's dimensional stability makes it great for many projects, but it usually doesn't stain to the same hue as the solid-wood banding along its edges. Here are three fixes.

Adhesive beneath a plywood veneer can throw off stain penetration compared with solid wood, whether on an edge-banded shelf or a bookcase made from plywood sides and a solid-wood frame. Try these simple tricks to help your project parts look like they came from the same tree.

■ Stain helps equalize minor color differences, but it can make matters worse when it highlights the pores of mismatched grain. First minimize the challenge by matching the grain pattern of the banding to the plywood grain, as shown *below*.

■ Avoid smearing squeeze-out across the surface during glue-up, or you'll end up with light spots on top of your other color-matching problems.

If you anticipate staining mismatches, make practice glue-ups of finish-sanded scrap plywood or veneered MDF and solid wood to experiment with these three solutions:

1 Try gel stain first

Unlike liquid oil-based stains designed to penetrate wood as much as possible, the thick consistency of oil-based gel stains helps control how much color penetrates both solid wood and veneer.

After applying a consistent coat of gel stain to all parts, stop short of wiping off all the excess on areas that need darkening. Should you accidentally leave streaks on the wood, wipe them away with a clean cloth moistened with mineral spirits, and start over.

2 Condition the wood

Wood conditioner works like a thin film finish to block stain from over-penetrating porous areas. By partially filling pores as well as the surface, it also reduces earlywood/latewood contrast, as shown *top left*.

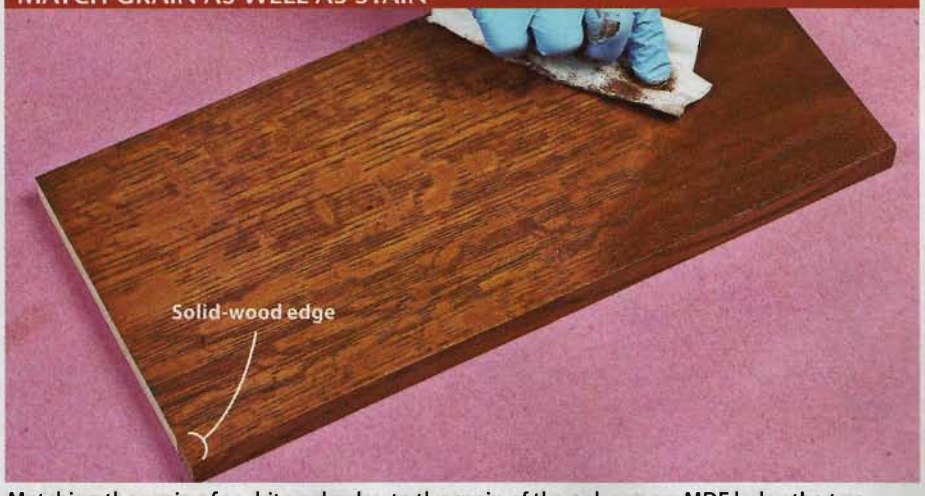
You can buy ready-mixed wood conditioner or make your own by mixing two parts mineral spirits to one part polyurethane or alkyd-resin varnish. To apply conditioner, brush it onto the surface and allow it to penetrate thoroughly. Then wipe away any surplus, and let it dry overnight. Lightly sand the surface with 220 grit, wipe clean, and apply stain.

3 Seal, then stain

For the most consistent color, even between wood parts of different shades, apply stain to a layer of film finish instead of the wood itself. Dewaxed shellac provides a quick-drying sealer. To mix your own, dissolve 3 ozs of shellac flakes in 16 ozs of denatured alcohol. Or buy premixed shellac sealer, such as SealCoat (zinsser.com), and thin that by half with denatured alcohol. Avoid flakes or premixed shellac containing wax; polyurethane has trouble sticking to it.

Brush on or spray the sealer evenly across all surfaces, and allow it to dry. Scuff-sand the surface with 220 grit, and apply the stain. One caveat: The sealer will make it difficult to achieve dark stain colors, but it eliminates blotching and lessens grain contrast.

MATCH GRAIN AS WELL AS STAIN



Matching the grain of a white oak edge to the grain of the oak-veneer MDF helps the two surfaces blend together after staining.

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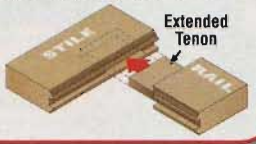

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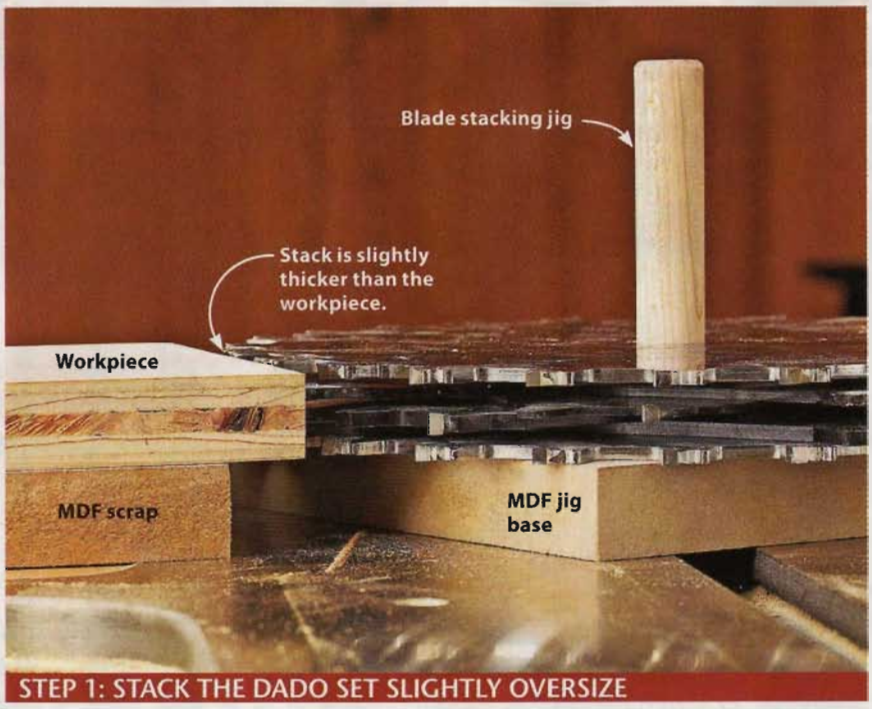


STEP 1: STACK THE DADO SET SLIGHTLY OVERSIZE

Forget tedious trial-and-error testing. The trick to tight table-sawn dadoes is to subtract—not add—shims.

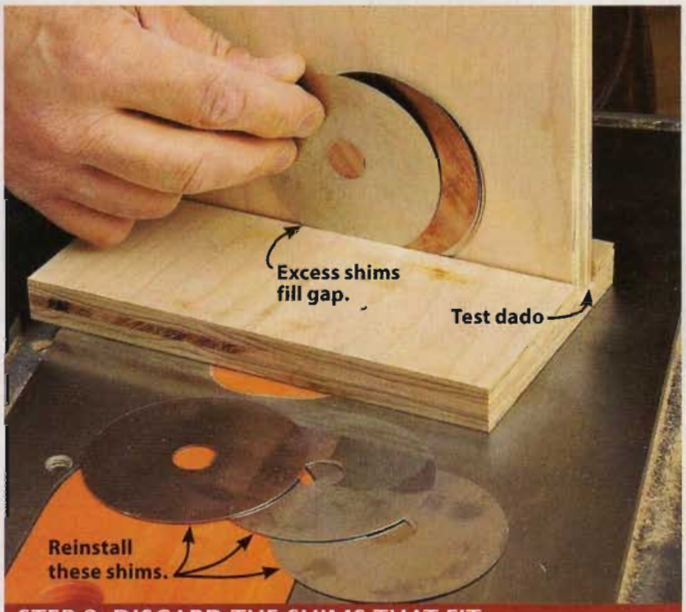
To start, you'll need two scraps, about 6" square of the same thickness. In one of those squares, center a 5/8" dowel about 4" long. Now follow these three steps anytime you need to cut a dado.

1 Finish-sand all workpieces that will be inserted into the dadoes, and lay one on the nondoweled scrap. Stack the blades and chippers on the doweled jig until they're just less than the thickness of the workpieces. Then add shims between the blades until the dado stack becomes slightly thicker than the workpiece, as shown *above*. Install the blades, chippers, and shims in your tablesaw, and make a test cut in scrap. (You don't need to worry about the dado height at this point.)

2 Remove enough of the dado set to retrieve all of the shims, then set them aside. Insert the workpiece end in the test dado, which should fit loosely. From the shims removed from the dado set, fit as many as possible into the gap between the workpiece and dado edge, as shown *below left*. Set aside these shims and install the remaining shims as you reassemble the dado set.

3 Set your blade height for the finished dado depth, and make a second test cut to confirm the correct width and depth. Now you're ready to cut dadoes for gap-free joints like the one shown *below*.

Watch a FREE video on how to make tight dadoes at woodmagazine.com/videos



STEP 2: DISCARD THE SHIMS THAT FIT

STEP 3: CUT THE PERFECT DADO

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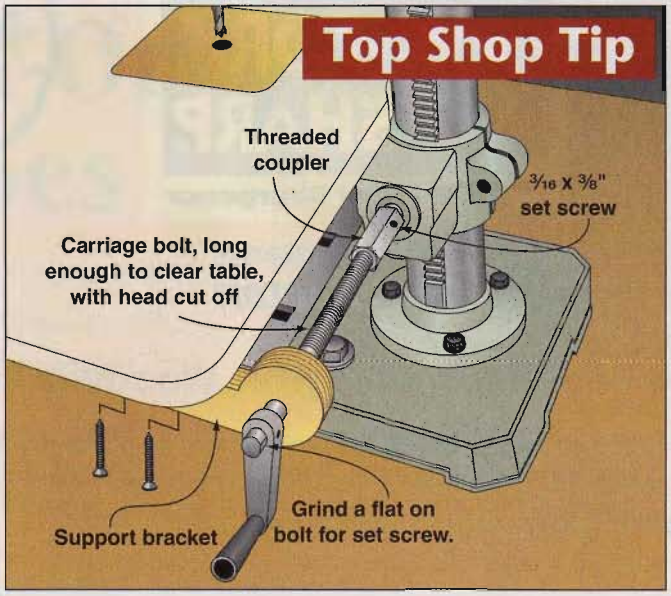
Circle No. 1665

Shop Tips

Helping you work faster, smarter, and safer

Blocked drill-press crank needs an extension

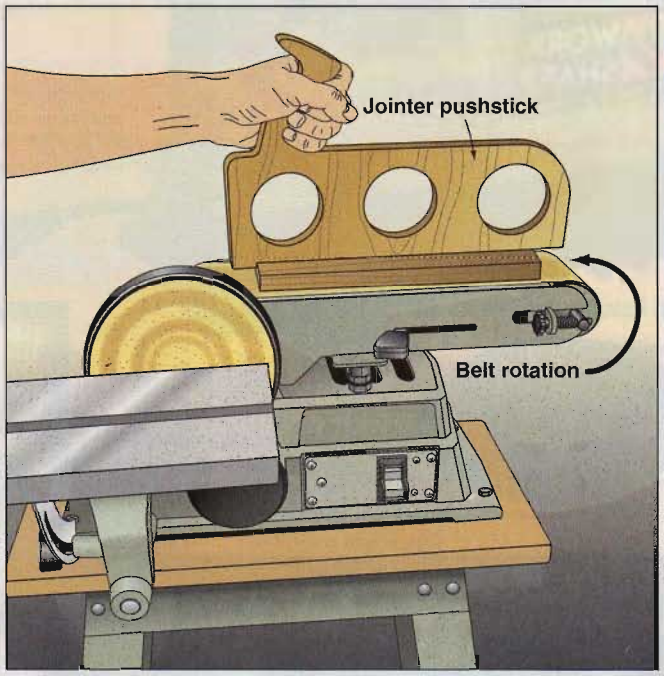

Top Shop Tip
Threaded coupler
3/16 x 3/8" set screw
Carriage bolt, long enough to clear table, with head cut off
Support bracket
Grind a flat on bolt for set screw.

After adding an auxiliary tabletop to my benchtop drill press, the new top prevented the table-elevation crank from turning. Here's how I worked around the problem: First, I removed the crank handle and replaced it with a threaded coupler drilled and tapped to accept a set screw. Next, I cut the head off a long carriage bolt and ground a flat area to accept the table crank's set screw. (Size the coupler and carriage bolt to fit your drill-press crank's shaft.)

To stabilize the extended handle, I attached a support bracket to the bottom of the table. Finally, I threaded the carriage bolt into the connector and the handle, securing both ends with set screws. My new extended crank works like a champ.

—Bob Hoffmann, Sugar Hill, Ga.

Sand safer with a jointer pushstick



While removing the mill marks on some lumber with my stationary belt sander, I noticed (for the umpteenth time) that my knuckles were very close to getting scraped as I held the board's edges. I had recently made *WOOD®* magazine's "Sure-grip" jointer pushstick [free plan at woodmagazine.com/jpushstick]. So, I used it to keep my fingers clear, as shown. The board stayed on the sander and the skin stayed on my hand.

—Charles Hamilton, Gray, Tenn.

continued on page 20

The Top Tipster

Photo: David Naugle

Telecom engineer Bob Hoffman has two places where he makes small pieces of wood from large pieces of wood: his fully equipped 2-car garage workshop and his twice-weekly karate sessions. Both require careful attention to finger safety.

Bob Hoffman will be the first woodworker or martial artist on his block to have Freud's new Doweling Joiner, which we're sending for submitting this issue's Top Shop Tip.

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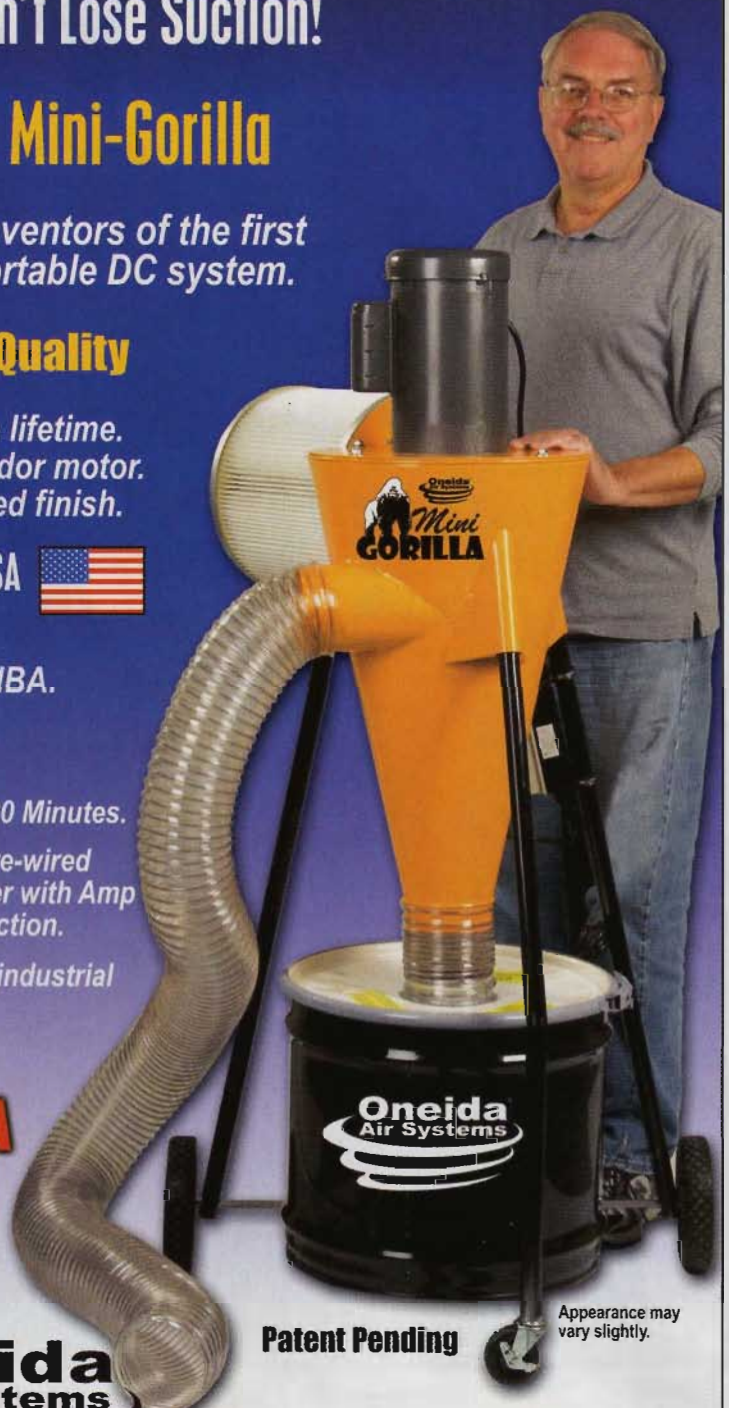

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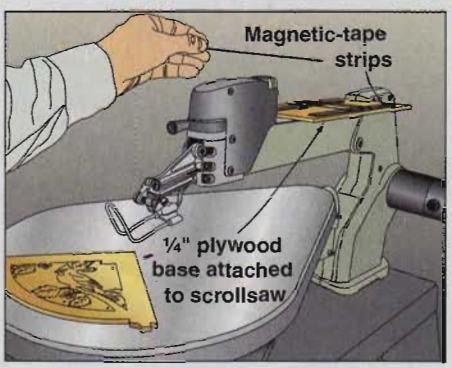
Shop Tips

Easy-to-reach scrollsaw blade keeper

Scrollsaws aren't known for an abundance of onboard storage space. So I stuck strips of magnetic tape I got from the office supply store to a small piece of plywood and mounted it to the scrollsaw arm. The blades stay within easy reach and the magnet keeps them from vibrating onto the floor.

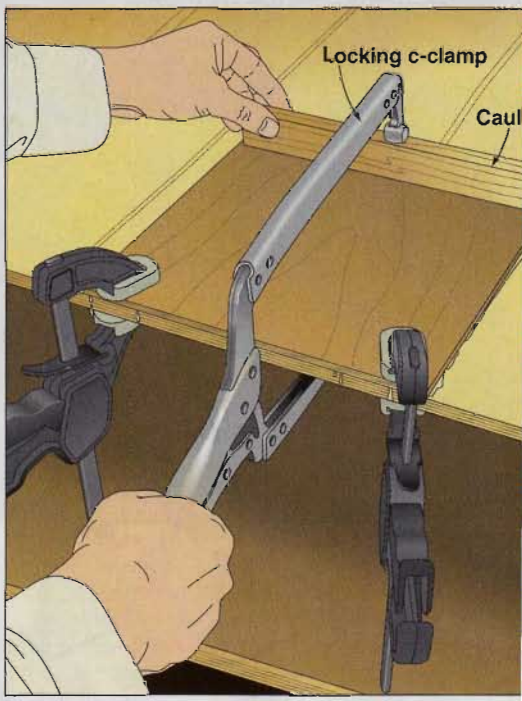
—Rick Hutcheson, Grimes, Iowa



Metalworkers hold the key to deep clamping jobs

My last project, an entertainment center, had a part that was difficult to clamp due to its depth. None of my woodworking clamps had enough reach. So, I turned to my locking C-clamps. The jaws' 11" reach, with the aid of a clamping caul, distributed the pressure perfectly.

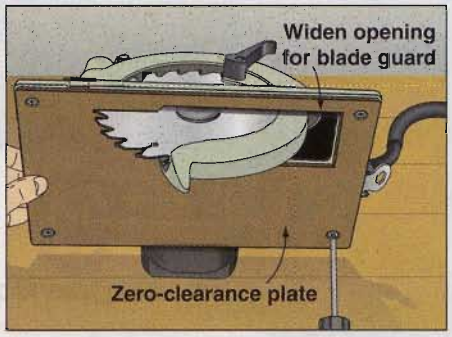
—Bob Kelland, St. John's, Newfoundland



Let your guard down for circ saw safety

I added a ⅛" hardboard auxiliary zero-clearance plate to my circular saw to improve the cut quality, but I didn't like that the retracted guard left the blade exposed. Then I realized that the workpiece really only needs zero-clearance support where the blade teeth exit the workpiece at the front of the cut. So I used a jigsaw to widen the back two-thirds of the blade opening to allow room for the blade guard to snap back into place just as it was made to do.

—Rob Price, Watkinsville, Ga.



Shoe organizer turned glue organizer

Don't let your shop door go unused as storage space. I took my daughter's old mesh, wall-hung shoe organizer and secured it to the door with a couple of screw hooks. Now it holds glues, compressed air, and spray finishes—any small container, really.

—James Pruett, Rutherfordton, N.C.

continued on page 23

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Holds 2 Full Strips of T50 Staples-Shoots Over 2000 Staples Per Full Charge
At-A-Glance Staple Supply Window
LED Guide Light
Staple Exit Guides

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The ultra-bright "LED guide light" will light any surface with precision positioning of the staple location. The adjustable "depth of drive" control lets you perfectly fire each staple to the desired depth.

Unique to the CT50™ this tool holds two full strips of any of the six Arrow T50® staple sizes saving time on the project.

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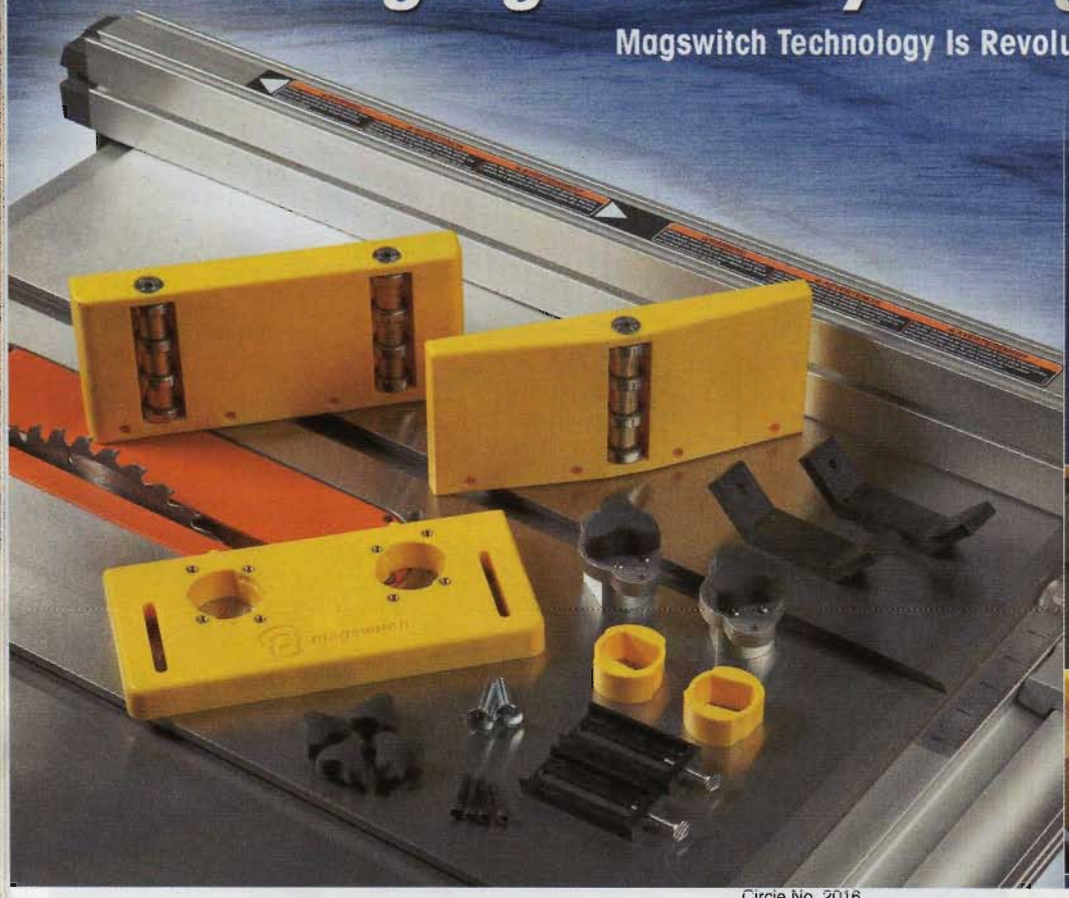

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Portability: The JDS Cyclones have a base with wheels that allow the cyclones to be transported anywhere!

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JDS company

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Circle No. 1974

Self Cleaning Canister: The JDS Cyclones are equipped with a 1 micron canister that is self cleaning. Every time the unit is turned off a signal is sent to the canister motor that activates cleaning "flappers" inside the canister!

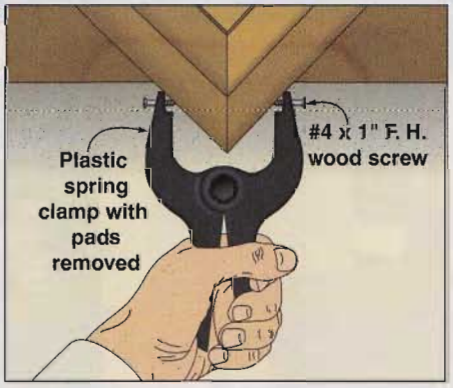
More Power: The unique "Turbo-Fan" impeller from JDS now provides more CFM and greater performance at high levels of static pressure.

World's most economical corner clamps

Rather than buy a specialty clamp set for mitered corners, you can make your own like I did. Simply take some cheap plastic spring clamps, remove the pads, and drill holes to accept #4×1" flathead wood screws.

To clamp up a mitered corner, drive the screws through the clamp so the tips will just bite into the wood, and clamp the joint as shown. Driving the screws a little further ensures that the clamp won't slip.

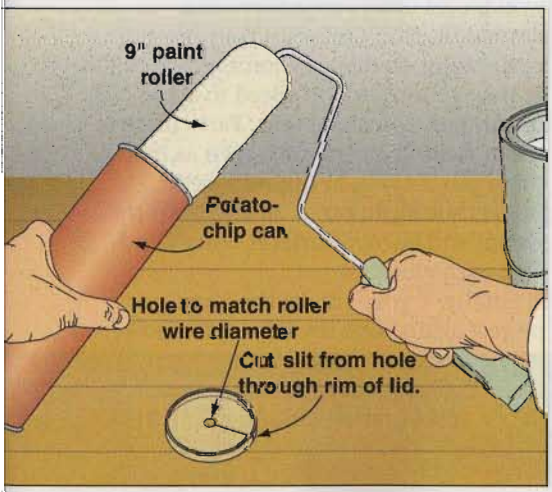
—Mike Radcliff, Nashville, Tenn.



Scarf a snack, save a paint roller

I hate washing out my paint rollers when I have to take a break for lunch or overnight. So, to keep the roller from drying out, I store it in a discarded potato-chip can. After cleaning out the can, drill a hole in the center of the lid and cut a slit from the hole to the lid edge. Then slip the roller into the can and snap the lid into place. The can works great as a roller saver (and as an excuse to eat potato chips).

—Gerrit DeBoer, Grandville, Mich.



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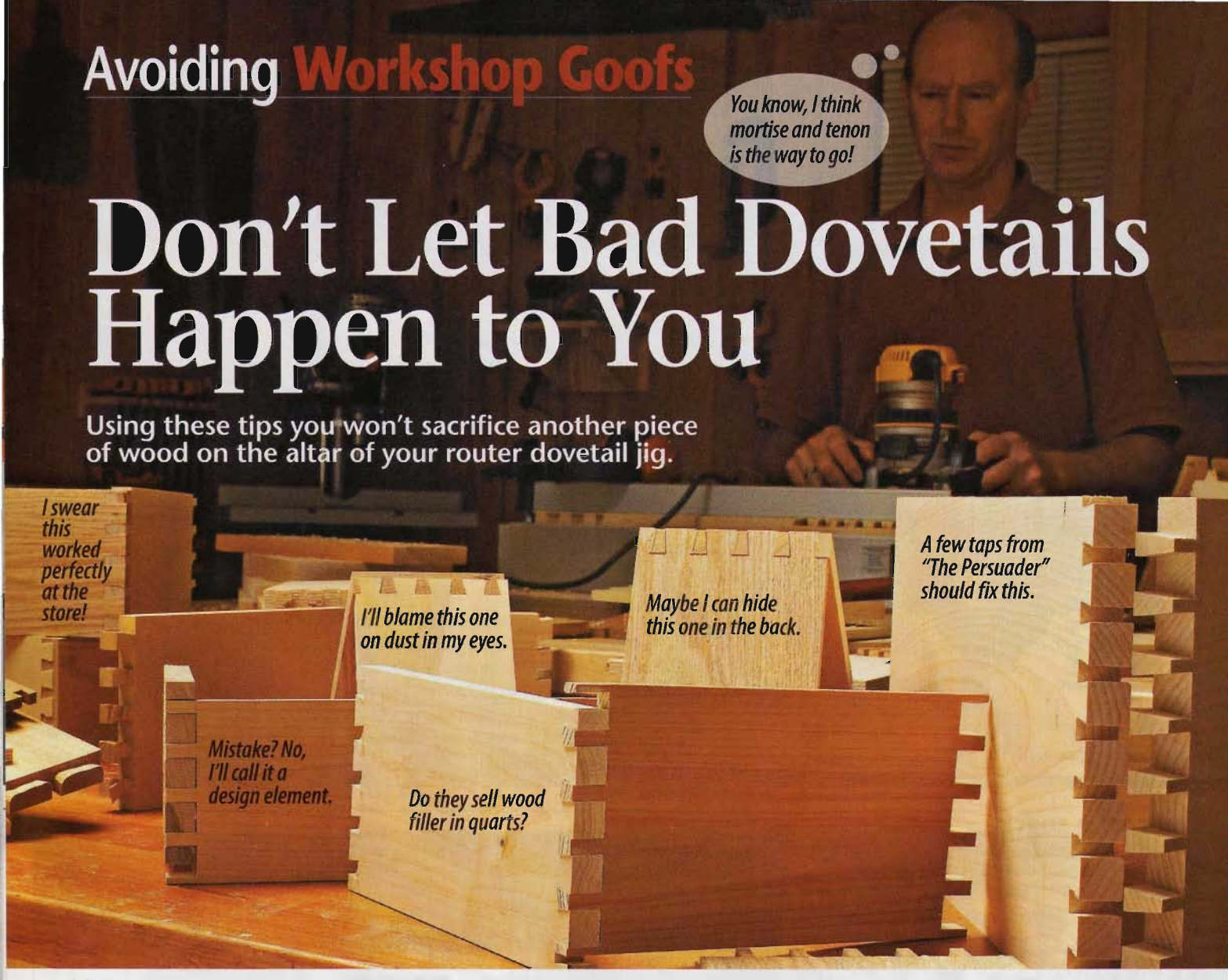
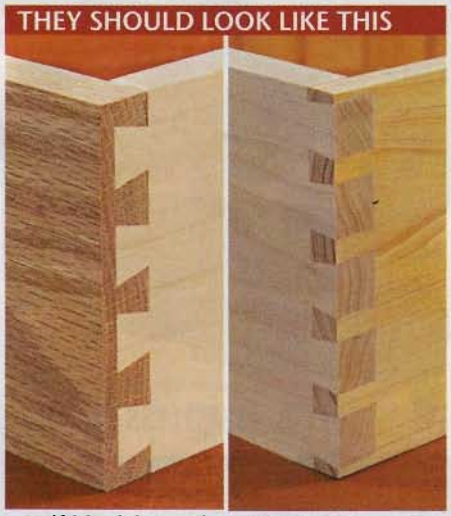

You know, I think mortise and tenon is the way to go!
I swear this worked perfectly at the store!
I'll blame this one on dust in my eyes.
Maybe I can hide this one in the back.
A few taps from "The Persuader" should fix this.
Mistake? No, I'll call it a design element.
Do they sell wood filler in quarts?

Don't Let Bad Dovetails Happen to You

Using these tips you won't sacrifice another piece of wood on the altar of your router dovetail jig.

Dovetail joints are one of the hallmarks of quality woodworking, and a router and store-bought jig make quick work of them.



Half-blind dovetail | Through dovetail

But the fit of these eye-catching corners must be precise, as shown at *left*. And if you don't use your jig often, it's easy to forget even one small thing that results in poor-fitting joints. Here's how to minimize the headaches.

These hints will get you started on the right foot

- Read the owner's manual and do what it says. Proper setup heads off most goofs, and when you need help the solution often will be found there.
- Use the correct router bits, guide bushings, and jig templates. Manufacturers design all three elements to work together; straying from the right combination invites problems.
- Machine all your workpieces square and to the correct dimensions. Interlocking pieces don't have to be of the same thickness, but they must be flat and square to make a tight-fitting joint. When you're routing multiple joints with the same setup, make all common pieces (drawer sides, for example) identical in thickness and width.
- Always make test cuts in scrap stock that's of equal dimensions to your workpieces until you achieve the desired fit. Don't mess up your project parts trying to dial-in a joint.
- Slow your router bit speed to avoid burning the pins and tails. Particularly when routing closed cuts, such as half-blind pin sockets, at higher speeds, trapped heat can build up and burn the wood; and burned surfaces don't bond well with glue.
- Finally, if you'll make the same project again, save the final test pieces to use as set-up blocks for the next time. Then use those to set the bit depth and workpiece position in the jig.

continued on page 26

PRECISION CONTROLS AT YOUR FINGERTIPS.

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CONVENIENCE IN A WELL-DESIGNED DRAWER.

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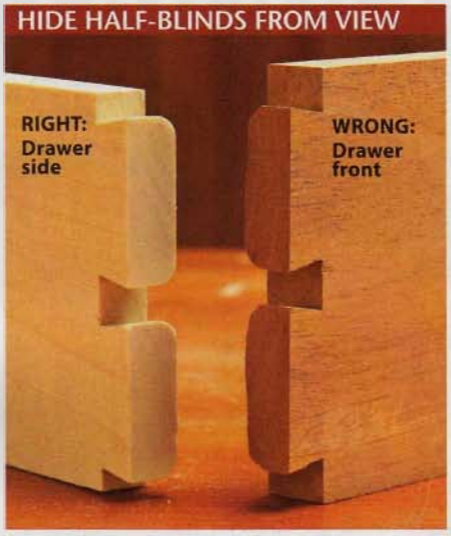
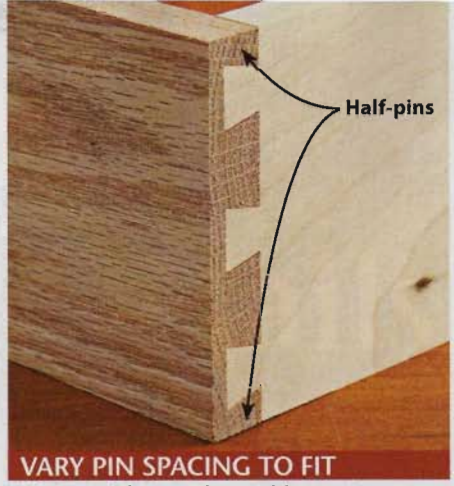
Head off half-blind errors

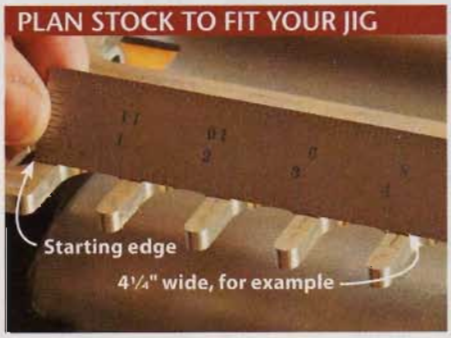
GOOF: You've cut tails instead of pins on a drawer front.
HOW TO AVOID IT: Before routing, label all components (front, sides, back) near the joint for easy reference. Also, whenever possible use contrasting stock for your drawer front so it stands out from the other parts.



GOOF: Thin or unequal end tails or pins weaken a joint or leave it with an unattractive appearance, *below*.
HOW TO AVOID IT: If your jig allows variable pin spacing, set the template fingers so you get at least a half-pin on each end, as shown at *right*. If your jig does not have variable spacing, you'll need to plan your project or drawer widths to match the template spacing. To do this, measure the template width between half-pins closest to what you'd like, as shown at *far right*, and make that your workpiece width.



Using a Leigh jig with variable spacing, we made the two center pins wider and spaced the tails farther apart for visual balance.



With a fixed template, measure from the edge stop to the right side of any finger and make your workpieces that width.

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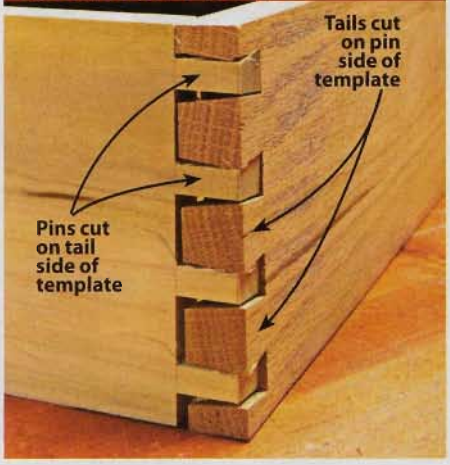
Circle No. 2045

Thwart mistakes with through dovetails

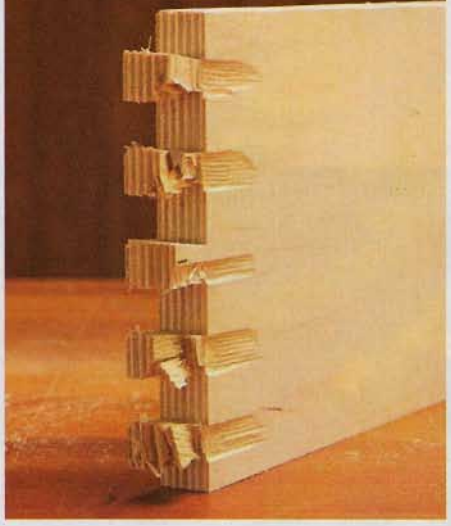
GOOF: You've cut your tails and pins with the wrong bit or the wrong side of the template, as shown *below.*
HOW TO AVOID IT: Remember this: *Dovetail* bits use *straight* template fingers, and *straight* bits use *angled* fingers. Again, labeling project parts helps avoid confusion. Also, sketch the joint on the end grain and mark an X to indicate the areas to remove.

PUTTY WON'T DO IT

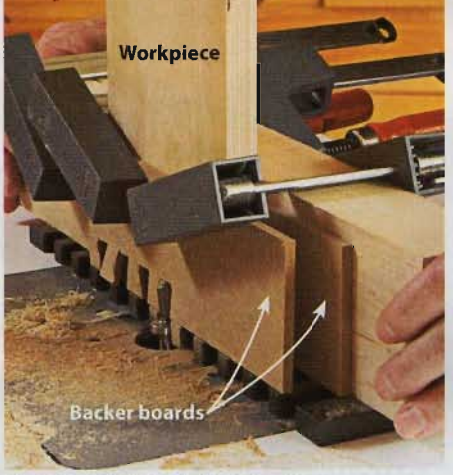


GOOF: The bit tears chunks from your workpiece as it exits the cut, *below.*
HOW TO AVOID IT: Sandwich your workpiece in the jig between two backer boards, as shown *below right.* Like a zero-clearance insert on your tablesaw, these sacrificial boards support the fibers of your workpiece to prevent tear-out. When routing pins or tails wider than the bit diameter, rout in incremental steps, removing the waste material in three or four left-to-right passes rather than simply plunging through the workpiece.

A JOINT BEYOND FIXING



MAKE A BOARD SANDWICH



Use any scrap stock, such as this hardboard, to back up your cuts on both faces.

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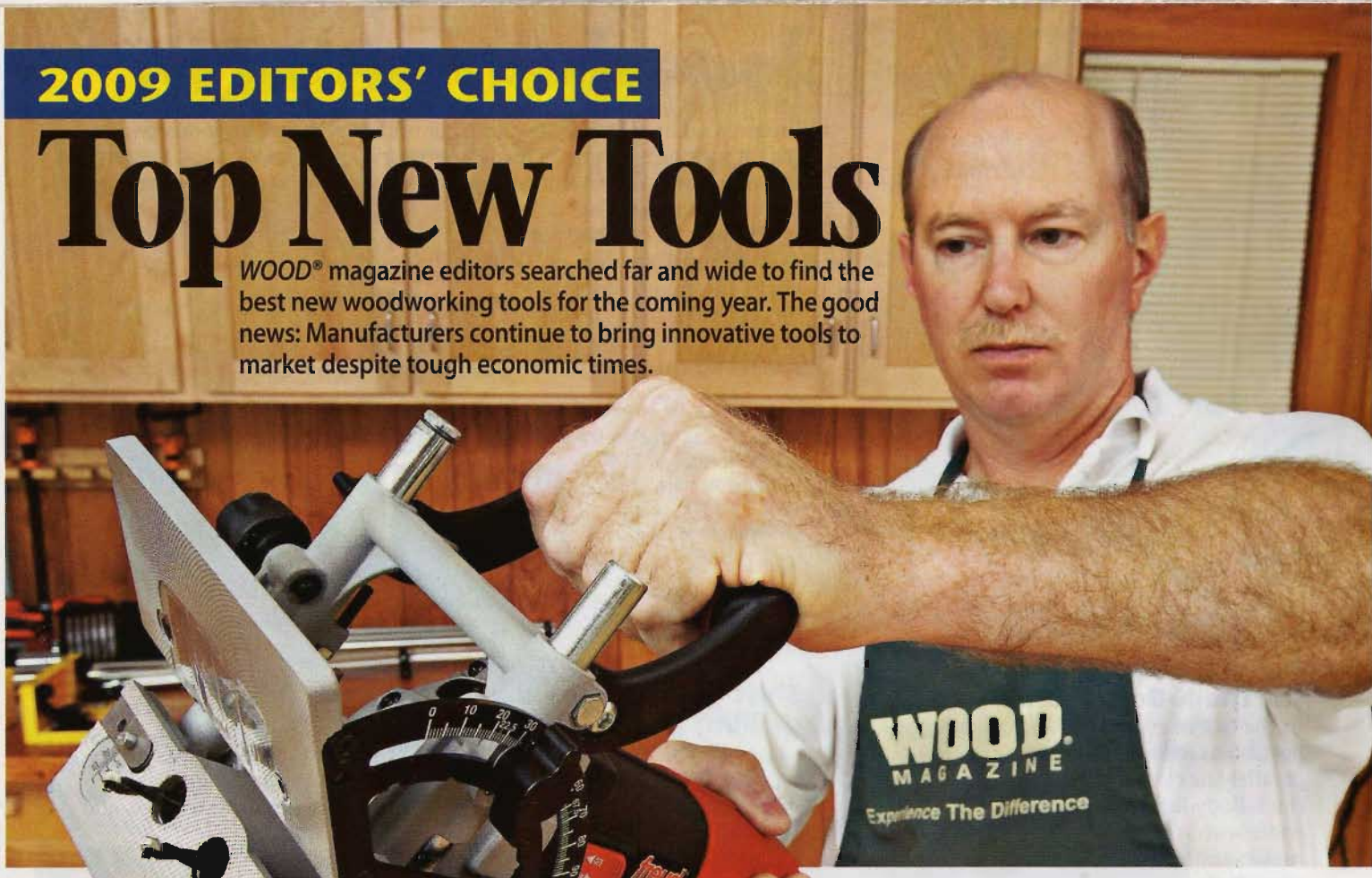
Circle No. 1520

2009 EDITORS' CHOICE

Top New Tools

WOOD® magazine editors searched far and wide to find the best new woodworking tools for the coming year. The good news: Manufacturers continue to bring innovative tools to market despite tough economic times.



The strength of dowels; the speed of a biscuit joiner

Combine the best attributes of dowel and biscuit joinery and you'll see why we think Freud's new Doweling Joiner will be a huge hit. A pair of spiral carbide router bits (in sizes from 3⁄16" to ½" in diameter) bore perfect dowel holes centered 1¼" apart. Use the adjustable, retractable pins on each side of the bits to register from a workpiece edge or another hole. And by running the Doweling Joiner along a straightedge, you can quickly and accurately rout rows of equally spaced shelf-pin holes.

"This tool is so intuitive and easy to use that it could be bad news for biscuits."
Bob Hunter, Tools Editor

Freud Doweling Joiner, $350
800-334-4107, freudtools.com

Extreme Makeover: Delta Unisaw edition

Delta's iconic cabinet-style tablesaw got a from-the-ground-up overhaul this year, and is being fully made in the U.S. What's new? For starters, you'll find big up-front blade-height and bevel handwheels, externally accessible bevel-stop adjustments, and a clock-face bevel gauge. There's also the 30"-deep cast-iron top (up from 27") with the added workpiece support in front of the blade, and an accessory drawer mounted under the table extension. Of course, it also sports features we've come to expect on high-end cabinet saws, such as toolless removal of the safety guard, splitter, and riving knife; an arbor lock for one-wrench blade changes; and a shroud around the blade for improved dust collection. It will sell with either a 3- or 5-hp motor and a Biesemeyer fence in 36" or 52" rip capacity.

Delta 10" Unisaw tablesaw, $2,800–$3,100
800-223-7278, deltaportercable.com

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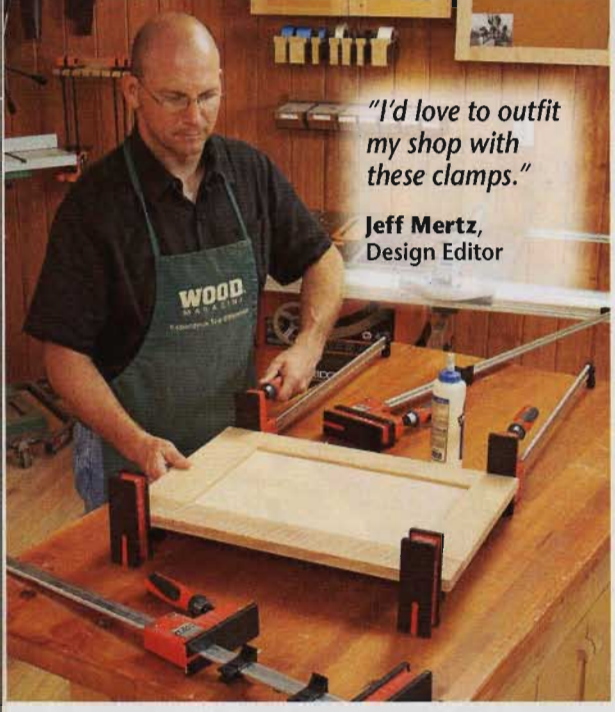

Milwaukee mitersaws digitally accurate to 1/10°

Milwaukee's first foray into the 12" mitersaw category yields two models loaded with user-friendly features. For mitering, there's an industry-first digital scale accurate to 0.1°, a detent override, and smooth-as-silk needle bearings under the rotating table. Add to that nine bevel stops, an effective 4"-wide dust-collection chute, incandescent lights on both sides of the blade, and a bevel-gear motor that reduces kick at startup and shutdown.

Milwaukee 12" dual-compound mitersaw (shown), $500; sliding mitersaw, $700
800-729-3878, milwaukeetool.com

A jaw-dropping face-lift for the K-Body clamp

In the face of ever-increasing competition, Bessey has redesigned the venerable K-Body parallel-jaw clamp. Using the same I-beam bar, the K-Body Revo jaws are ¾" taller and ½" wider with replaceable face pads. Easier-to-grip rubber-and-plastic handles replaced the wood ones. Each clamp now includes two saddle pads to place under gluelines to support the assembly and keep glue off the bar threads. Options include a sliding tail jaw (so you can center glue-ups on the bar), and a jaw adapter for clamping angled assemblies.

Bessey K-Body Revo Parallel-Jaw Clamps, $36–$72 (in 8 different lengths)
800-828-1004, besseytools.com

Shift gears automatically between drilling and driving

Never again wonder whether your drill/driver is in the right speed range for the job. These two lithium-ion-powered drill/drivers automatically shift gears as each task demands. They start in the high-speed range, and if the job needs more torque, the automatic transmission switches immediately to the low range. There's also an override to lock the tool in the high-speed range.

AutoShift 18-volt Drill/Driver, Ryobi model, $200
800-525-2579, ryobitools.com

Ridgid model, $230
800-474-3443
ridgid.com

"Stretch" your bandsaw for resawing

Adding a 6" riser block to a cast-iron C-frame bandsaw increases its resaw capacity, but also its tendency to flex. The General International 90-200M1 allows you to adjust its resaw height in no time. With a solid-steel support shaft instead of cast iron, the head raises or lowers on a rack-and-pinion gear. So you can set the saw low and use a 93½" blade for ripping or curve cutting, or raise it to full height and install a 106" blade for a 12" resaw cut. This model also has ball-bearing blade guides, 16×16" table with rip fence, and flexible work light.

General International 15" Adjustable-Height Bandsaw, $1,480
888-949-1161, general.ca

Oscillating drum sander sands smoother, burns less

A drum sander removes thin layers of material without tear-out, but often leaves straight-line scratches from the abrasives. And resin buildup on the sanding drum can transfer burn marks to the workpiece. You then have to remove these scratches or marks with a portable sander or hand scraper. Jet's 22"-wide, open-ended Oscillating Drum Sander gives you the option of switching on 1" of side-to-side movement (like an oscillating spindle sander does vertically) as it sands to avoid these pitfalls. And its Sand Smart feature automatically slows the feed rate during demanding jobs to prevent bogging down the drum motor.

Jet 22-44 Oscillating Drum Sander, $2,050
800-274-6848, jettools.com

continued on page 32

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The Edge Banding router bit set adds an attractive edge to plywood panel doors and shelves. Two piece, carbide tipped, 1/2" shank.

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#1474 - 90° $39.95

"Custom Made Doors"

Our Mitered Door Frame Kit creates elegant Rail & Stile Doors. Includes 1/2" shank carbide tipped Profile Router Bit, 1/4" & 5/32" Slot Cutter bits & 100 #11 biscuits.

Item #1480.....$79.95

"Portable Versatility"

The Marvel 40 3-In-1 Router Kit is a 1 HP Router, Laminate Trimmer & Cut-Out Tool with 1/4" & 1/8" collets, 3 bases, straight edge, and circle cutter.

Item #1478 .....$89.95

"Classic Strength"

Make strong Half Blind 1/2" Dovetail Joints. Our set includes a solid Aluminum Template, 12" Steel Jig, and a carbide tipped 1/4" or 1/2" shank Dovetail Router Bit.

1/4" shank • #1483 | 1/2" shank • #1484.....$59.95

"Beauty-In-Utility"

The Shaker Cabinetmaker Router Bit Set makes professional Raised Panel Doors and Drawers. Five piece, carbide tipped, 1/2" shank.

Item #1485.....$114.95

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Circle No. 245

Portable cyclones offer better dust collection for the small shop

We prefer two-stage cyclone dust collectors to single-stage bag units because the vast majority of the debris falls into a collection drum and never reaches the impeller or filter. But traditional cyclones are big and require dedicated spaces. These portable units bring that superb separation into the home-shop realm with small footprints and about 5' heights. Oneida's Mini Gorilla comes with a 5" inlet and 10' of flex-hose, and specs about 600 cfm of suction. The JDS unit has one 8" inlet or two at 4", and claims about 1,700 cfm of suction. It also has a built-in filter cleaner that automatically beats the pleats inside the filter every time you shut off the machine.

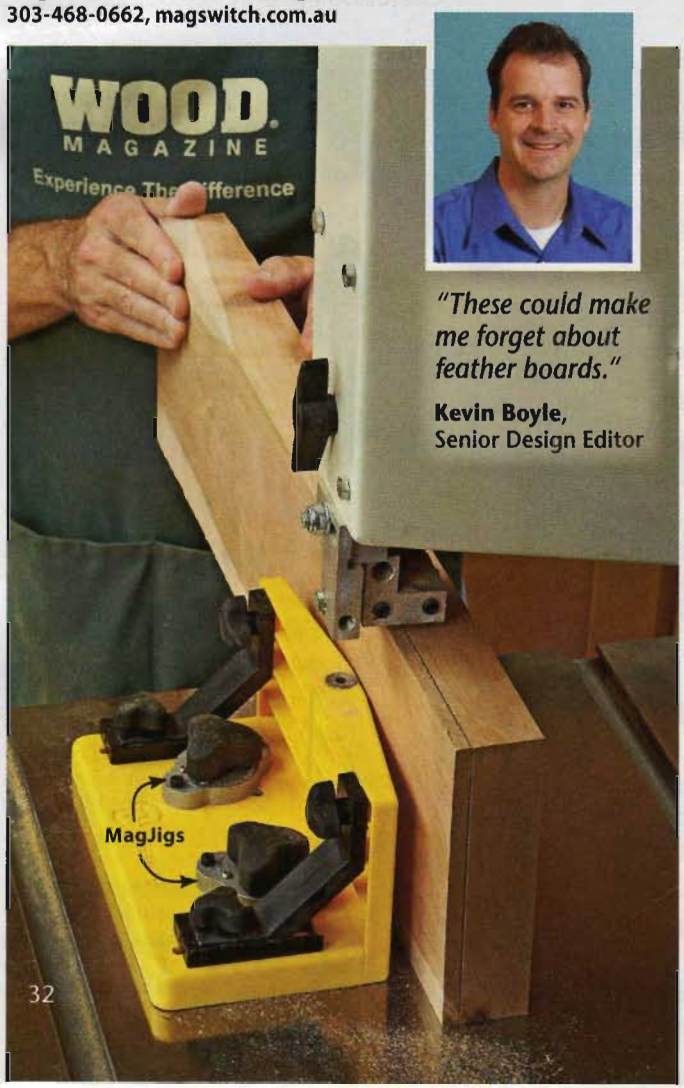
Oneida Mini Gorilla Mobile Dust Collector, $890
800-732-4065, oneida-air.com

JDS 2-hp Portable Cyclone, $1,300
800-480-7269, jdstools.com

Add a rock-solid helping hand wherever you need it

Two years ago Magswitch launched its powerful MagJig magnets that turn on and off with the twist of a switch. Now the company has developed an accessory hold-in/hold-down system with interchangeable workpiece supports. The Universal Mounting Base kit gives you the flexibility to place support right where you need it on any ferrous surface, using the two included MagJigs. One support is flat with two sets of roller bearings, and the other has a 7° bevel on each side of a single bearing guide. Both provide unflinching support without the resistance of a feather board on your tablesaw, bandsaw, or jointer.

Magswitch Universal Mounting Base Kit, $150
303-468-0662, magswitch.com.au

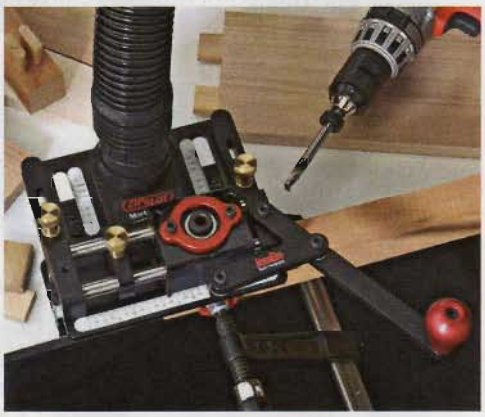


"These could make me forget about feather boards."

Kevin Boyle,
Senior Design Editor

Cut dead-on mortises with your handheld drill

JessEm's Zip Slot Mortise Mills allow anyone with an electric or cordless drill to machine perfect-size mortises. Bearing-guided bushings position the high-speed-steel spiral bit in the mill's slot; then you simply plunge the bit a little at a time as you slide it side-to-side using a lever. Each kit comes with loose hardwood tenons, or you can cut tenons on your workpiece. The smaller mill makes only ¼"-wide mortises—perfect for ¾" stock—while the larger unit makes ⅜" mortises standard with optional ¼" and ½" accessories available.



JessEm Zip Slot Mortise Mill, ¼" model, $100; ⅜" model, $250
866-272-7492, jessem.com

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Circle No. 50

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Circle No. 2151

Shaker-style Dresser

Part of the beauty of this dresser is its uncomplicated construction. Even the drawers require only simple tablesaw cuts.

PROJECT HIGHLIGHTS

- Overall dimensions: 39¼" wide × 21¼" deep × 49¼" high.
- Materials needed: Cherry, 1½", ¾", ¼"; soft maple, ¾", ½", ¼"; cherry plywood, ¾"; birch plywood, ¼".

Sure to become a family heirloom, this six-drawer cherry dresser combines classic Shaker style and practicality. Build it alone, or add the separate valet (*page 41*) and wall mirror (*page 66*). The dresser and accessories match the pencil-post bed shown in issue 187 (November 2008). A seven-drawer lingerie chest, coming in issue 189 (March 2009), rounds out a complete bedroom set.

Start with the side parts

1 Cut four leg blanks (A) [**Drawing 1**] to size [**Materials List**, *page 40*]. (You can cut them from solid stock or laminate them.) Mark the position of each leg on its top (FL for front left, for example).

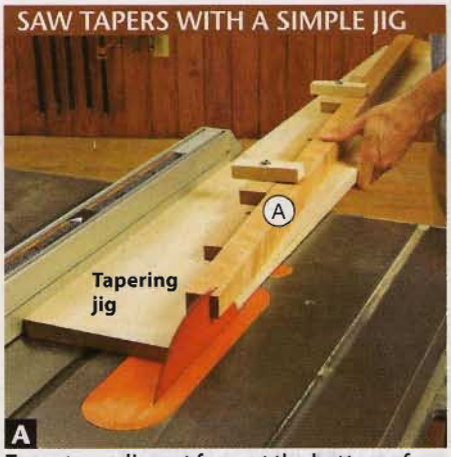
2 Lay out the tapers on the two inside bottom faces of each leg (A) [**Drawing 1**]. Using a tablesaw and tapering jig (see Quick and Easy Jig, *page 12*), cut the tapers [**Photo A**]. Sand the tapers to remove saw marks.

3 Lay out the locations of the mortises for the front rail (F) and back rail (G) on the legs (A) [**Drawing 1**]. Form the mortises by drilling a ¼" hole ½" deep at each end of each mortise. Then drill evenly spaced holes between them, and clean out the mortises and square the corners with ¼" and ¾" chisels.

4 Cut the side panels (B) to size. Rough-cut the panels for easier handling, and then rip and trim them to size on your tablesaw.

5 Install a ¾" dado blade on your tablesaw and set the cutting depth to ⅜". Cut five dadoes and a rabbet in the inside face of each side panel (B) [**Drawing 1**].

6 Lay out the arc on the bottom of each side panel (B) [**Drawing 1**] by marking the centerpoint, and then



Taper two adjacent faces at the bottom of each leg (A). The straight sides face out at each corner.

SHOP TIP

Groovin' and gluin' avoids squeeze-out messiness

When gluing parts onto the face of a panel, glue will squeeze out from behind the onlay onto the panel. Removing the glue along the joint is difficult, which could affect the finish. A blade kerf about ⅛" deep, ⅛" from the edge on the back of the onlaid part will catch the glue and keep it from getting on the panel. Cut grooves at the top and bottom of the upper rail (C) and at the top only on the bottom rail (D).

drawing a line through it and the endpoints of the arc with a fairing stick. (Go to woodmagazine.com/fairing for a free fairing stick plan.) Bandsaw slightly outside the line, and then sand to the line.

7 Lay one side panel (B) on your workbench, dadoed side up, and lay the front and back legs (A) for that side in position, flush with the panel at the top. Mark biscuit locations on the side panel, centered between the dadoes and the dado and rabbet at the top [**Drawing 1**]. Mark the corresponding locations on each leg. Repeat for the other side panel and legs.

8 Adjust your biscuit-joiner fence to center a #20 biscuit slot on the thickness of the side panel (B). Plunge slots at the marked locations on the panels. Finish-sand the side panels to 220 grit.

Make both sides, now

1 Adjust your biscuit-joiner fence to place a #20 biscuit slot ⅝" from the inside edge of the legs (A) [**Drawing 1**]. Plunge slots at the marked locations. Finish-sand the legs, using a flat sanding block to prevent rounding the faces.

2 Cut the upper side rails (C) to size [**Drawing 1**]. Cut two blanks ¼x3¼x17" for the lower side rails (D); the extra width facilitates trimming the bottom arcs.

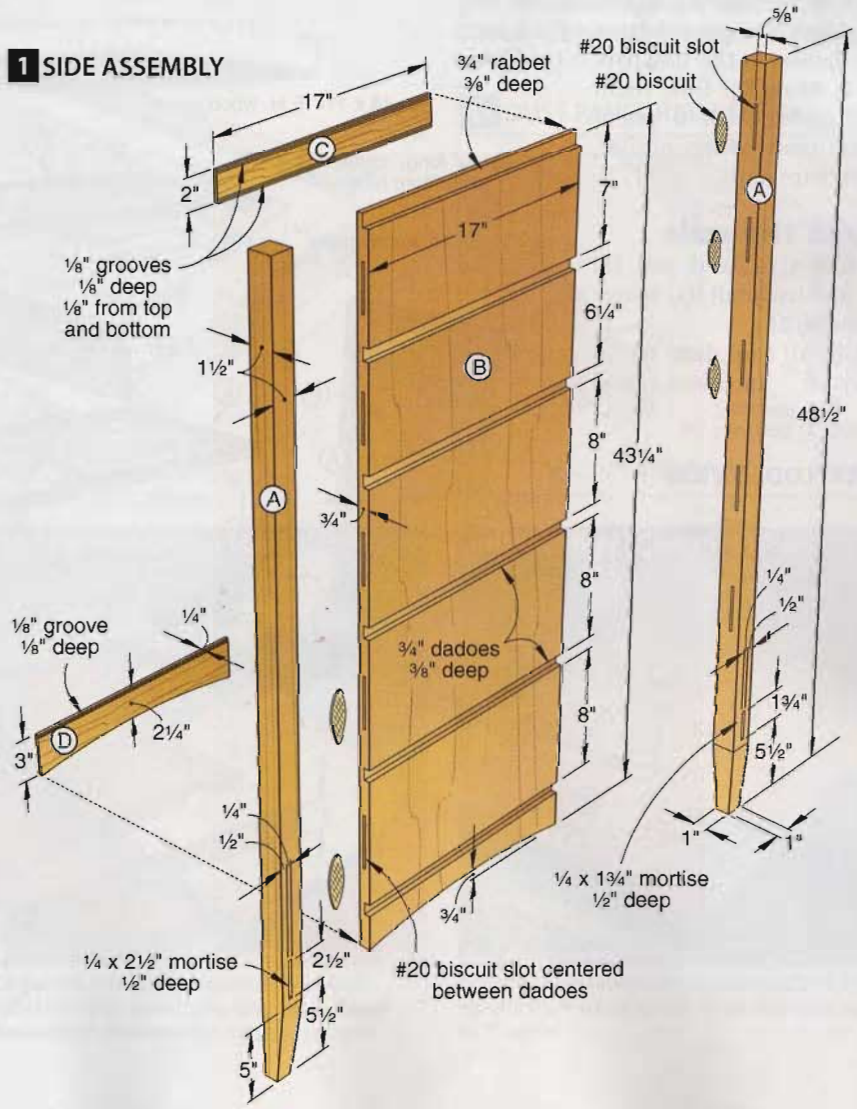
3 Lay out the arc on the lower side rail (D) [**Drawing 1**] with a fairing stick.

Quick tip! Stack-cut parts for uniformity and speed. Cut both parts at once: Lay out the arc on one blank. Then, stack both blanks with all edges flush, and fasten them together with masking tape or double-faced tape. Bandsaw the arc about ⅛" outside the line.

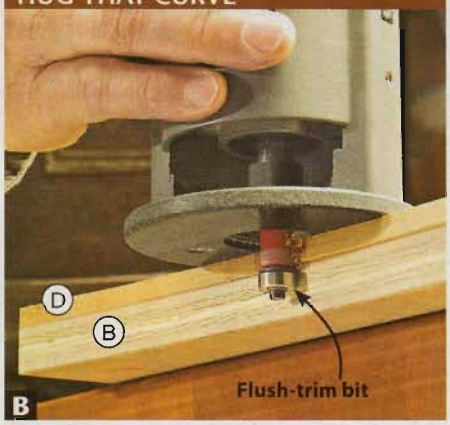
4 Attach the upper side rails (C) and lower side rails (D) to the side panels (B) [**Drawing 1**]. To prevent glue squeeze-out from marring the side panels, see the **Shop Tip**, *above*. Glue and clamp the upper side rails flush with the top edge of the side panels; let the lower side rails overhang the bottoms of the side panels by ⅛". Align the rail ends flush with the edges of the panels.

5 Chuck a flush-trim bit in your handheld router, and adjust the cutting depth so the pilot bearing rides on the bottom edge of the side panel (B). Then trim the bottom edges of the lower side rails (D) flush with the side panels [**Photo B**]. Finish-sand the rails (C, D) and touch-up sand the side panels.

6 Apply glue to the biscuit slots in two legs (A) and one side assembly (B/C/D). Run a bead of glue along the edges of



HUG THAT CURVE

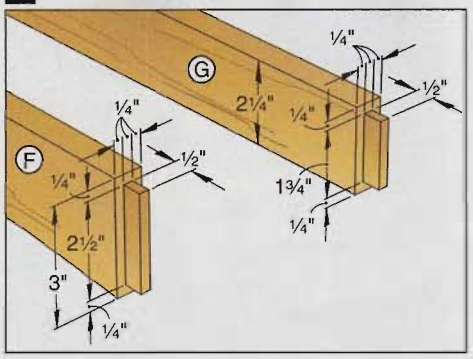


Keep the bearing on the flush-trim bit firmly against the bottom edge of the side panel (B) to neatly trim the lower rail (D).

GET YOUR SIDE TOGETHER

Glue the legs (A) to the side (B/C/D), flush at the top. Square the assembly, and clamp the top and bottom. Then add middle clamps.

3 TENON DETAILS



the side panel (B), near the dadoed face to minimize squeeze-out on the outside face. Lay the side assembly, dadoed face down, on ¼" spacers on your workbench, and insert biscuits in the slots. With the mortises in the legs facing down, assemble and clamp, keeping the tops of the legs and the side panel flush [**Drawing 1, Photo C**]. Repeat for the other assembly.

7 Cut the drawer spacers (E) to size. Align the spacer bottoms flush with the dadoes in the side panels (B) [**Drawing 2, Photo D**]. Glue them and fasten with a pneumatic brad nailer, pinner, or ½" wire nails.

Make the rails

1 Cut the front rail (F) and back rail (G) to size [**Drawing 2**].

2 Install a ½" dado set on your tablesaw and adjust the cutting depth to ¼". Cut the tenons on the ends of the rails (F, G) [**Drawing 3**].

3 Lay out, bandsaw, and sand the arc along the bottom edge of the front rail (F) [**Drawing 2**] as you did for the side panels (B). Finish-sand the front and back rails.

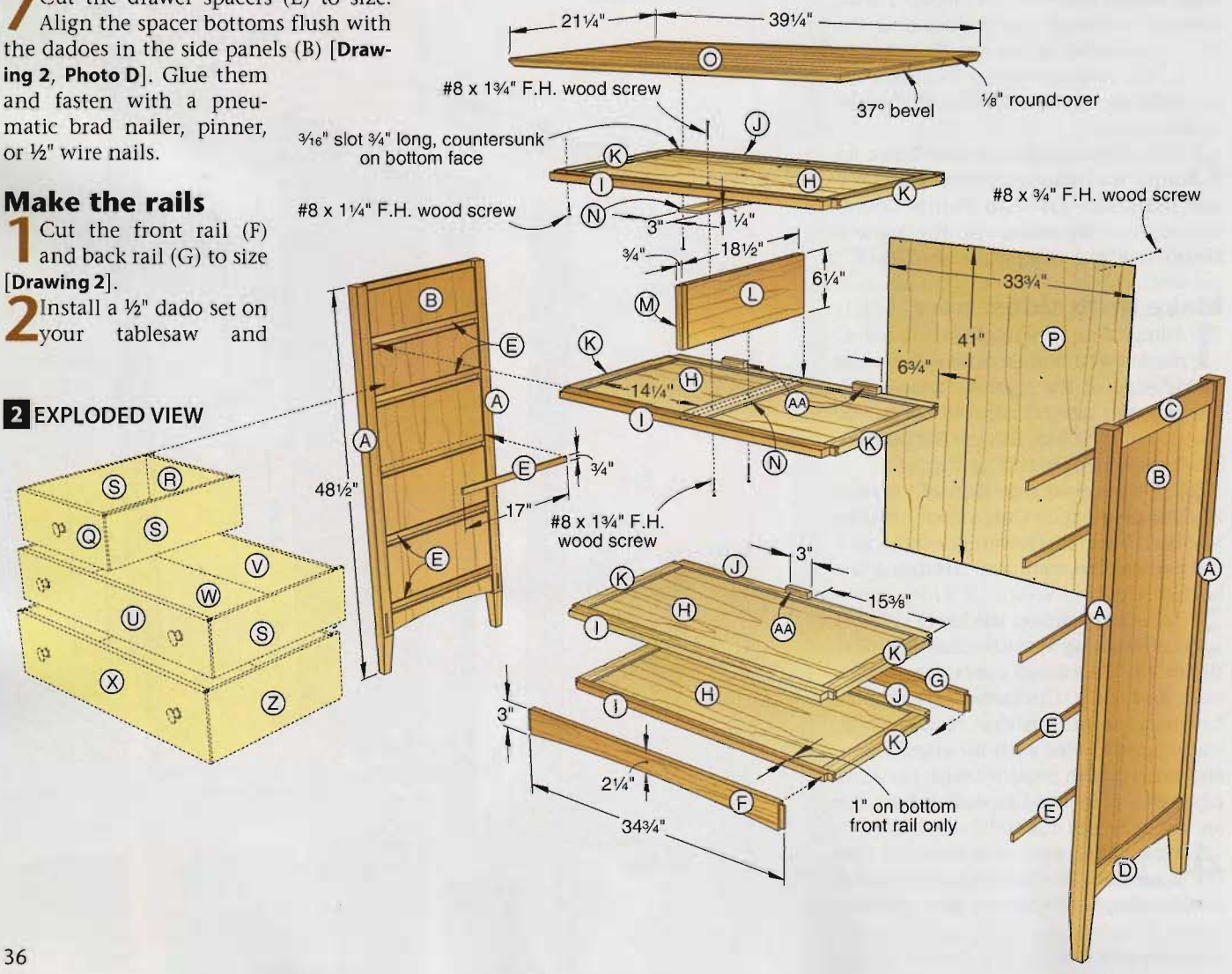
Dust off some panels

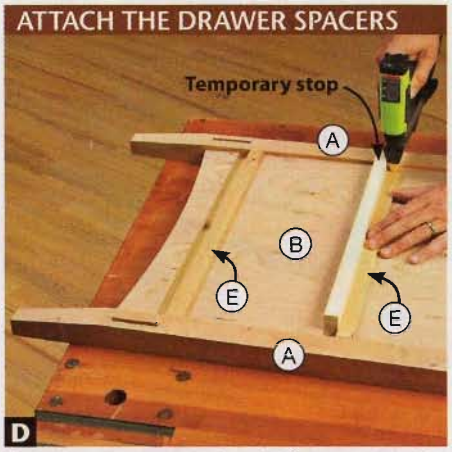
1 Cut the dust panels (H), dust panel front rails (I), back rails (J), and end rails (K) to size [**Drawing 4**].

2 Measure the thickness of the plywood dust panels (H), and then cut overlapping blade kerfs to make a groove that wide centered on the edge of the dust panel rails (I, J, K) [**Drawings 4, 4a**].

Quick Tip! Size grooves to fit plywood. Position the rip fence slightly more than half the thickness of the stock from the

2 EXPLODED VIEW



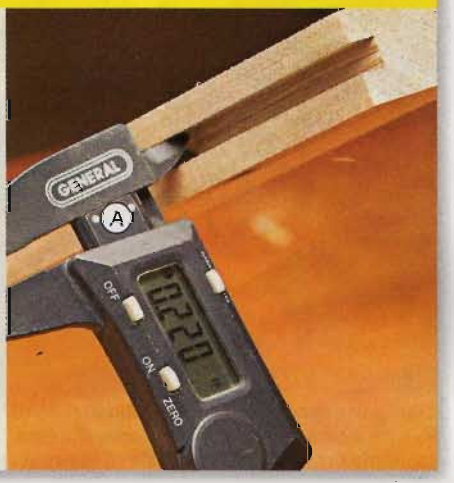


Cut a temporary stop from ¾" stock, and slip it into each dado in the side panel (B) to align the spacers (E) for gluing and nailing.

SKILL BUILDER

Stub tenons, by the numbers

Stub tenons on the end rails must fit into the grooves on the front and rear rails. To determine the rabbet depth for a centered tenon, measure the width of the groove (.220", for example), *right*, and subtract that from the thickness of the rail stock (.750"). Divide the result (.530") by two to determine the rabbet depth for each face of the tenon. (For this example, cut a rabbet .265", or 17/64", deep.) Make test cuts on scrapwood to sneak up on the best tenon fit.

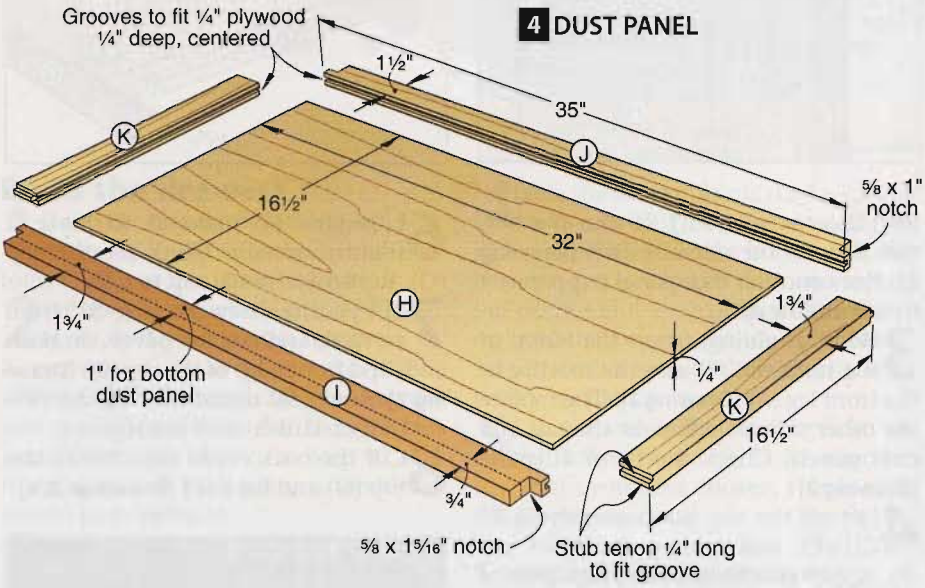


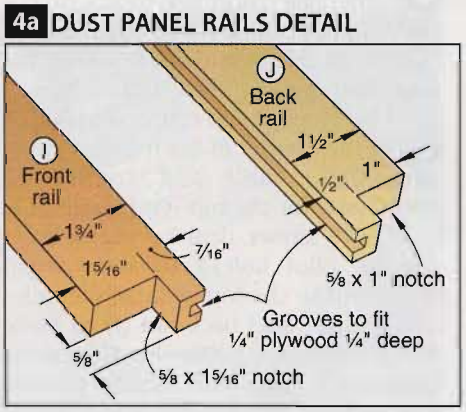
outside of the blade (about 7/16" for the dust panels). Then, cut a ¼"-deep kerf in scrap stock the same thickness as the rails. Rotate the piece end for end, and cut another kerf. Test-fit the plywood in the groove, and adjust as necessary. If the groove is too narrow, move the fence farther from the blade.

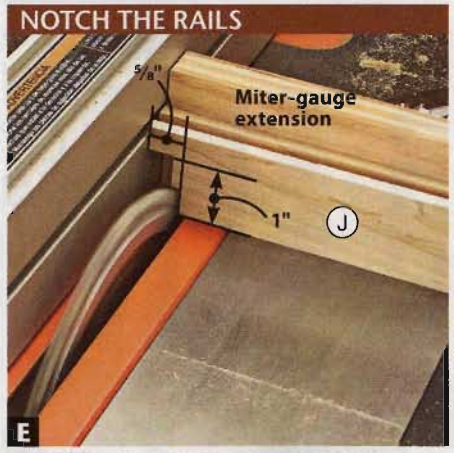
3 Cut ¼"-long stub tenons on the ends of the dust panel end rails (K) to match the grooves in the front and back rails (I, J). To determine the depth of the ¼" rabbets that form the tenon [**Drawing 4**], see the **Skill Builder** *above*.

4 Attach an extension to your miter gauge, and notch the ends of the dust panel rails (I, J) [**Drawing 4a**] with the dado set in several passes [**Photo E**].

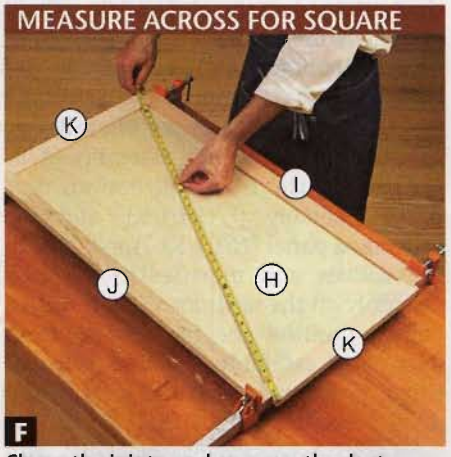
5 Arrange a dust panel (H) and rails (I, J, K) in assembly order on your bench [**Drawing 4**]. Apply glue in the rail grooves, assemble the dust panel, and clamp, checking for square [**Photo F**].



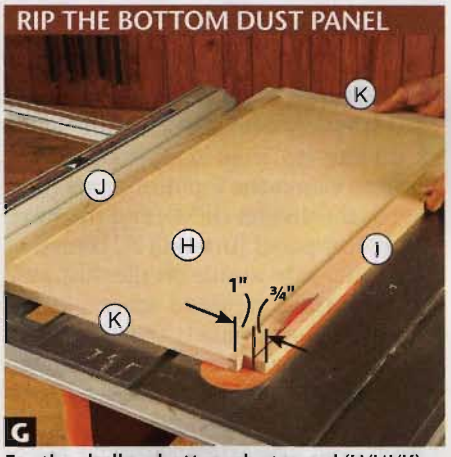




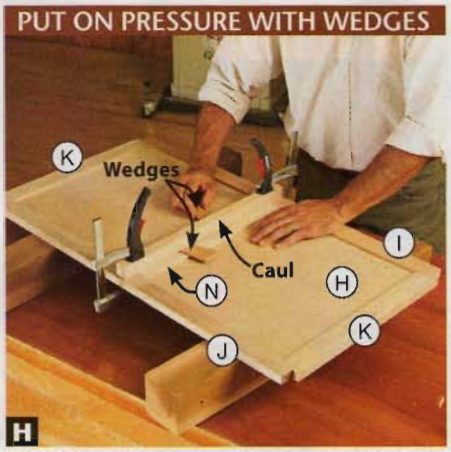
The tablesaw fence acts as a stop for the length of the notch. A miter-gauge extension supports the end of the rail (I, J) for cutting.



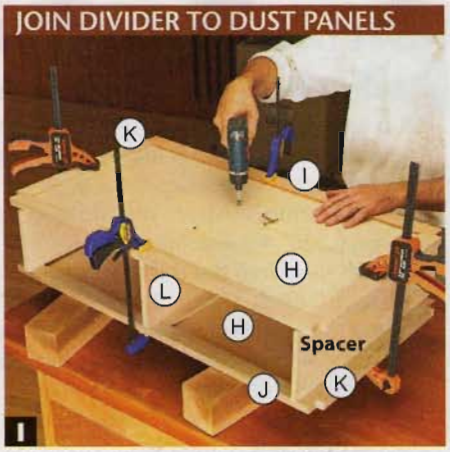
Clamp the joints, and measure the dust panel (H/I/J/K) across the diagonals. Equal dimensions indicate the panel is square.



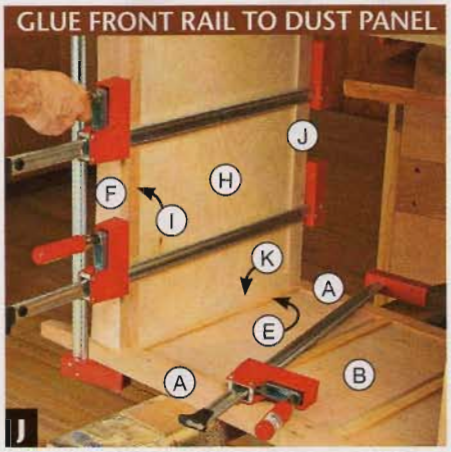
For the shallow bottom dust panel (H/I/J/K), rip the front (cherry) rail (I) on one dust panel to 1" wide.



Clamp the spacer (N) to the dust panel (H/I/J/K) with a caul. Insert wedges under the caul to apply pressure at the middle of the spacer.



Put temporary spacers between the ends of the dust panels (H/I/J/K/N) while you glue, clamp, and screw the divider (L/M) in place.



Make sure the top edge of the front rail (F) lies flush with the top of the dust panel front rail (I) as you clamp them together.

Construct the remaining five panels in the same way.

6 Rip ¾" off the front rail (I) of one dust panel (H/I/J/K) [**Drawing 4, Photo G**] to make the bottom dust panel [**Drawing 2**]. Finish-sand the panel.

7 Cut the divider (L) to size and the divider trim (M) to fit the front edge of the divider [**Drawing 2**]. Glue the divider trim to the divider, flush on all edges, and clamp. Finish-sand.

8 Cut two divider spacers (N) to size. Center one spacer side-to-side on the bottom side of the top dust panel (H/I/J/K) and the other on the top side of the next dust panel down from the top [**Drawing 2**]. Glue and clamp [**Photo H**].

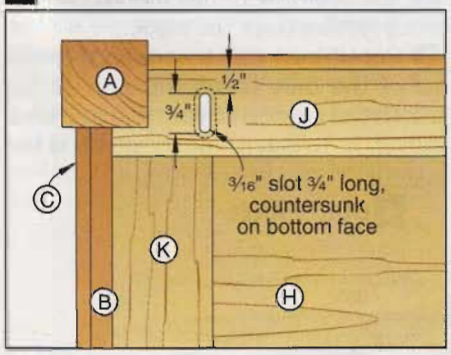
9 On the bottom of the top dust panel (H/I/J/K), drill and countersink screw holes for the top (O) [**Drawings 2, 5**]. (For #8 screws, drill 5/32" shank holes and 7/64" pilot holes.) To allow wood movement in the top, enlarge the holes in the dust panel back rail (J) to make slots about ¾" long [**Drawing 5**] by drilling through them with a 3/16" twist drill, and rocking the bit back and forth. Elongate the countersinks also. Finish-sand the remaining dust panels.

Construct the case

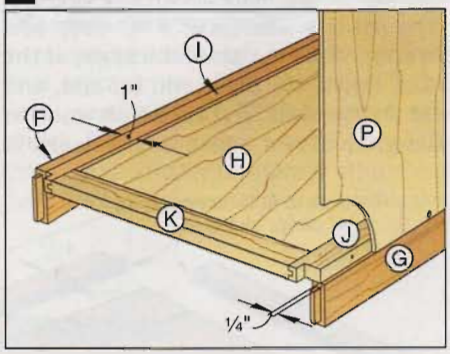
1 Cut two spacers the same size as the divider (L) from scrapwood. Then, glue and clamp the top dust panel (H/I/J/K/N), the divider (L/M), and the next-to-top dust panel [**Drawing 2**], centering the divider side-to-side on the dust panels. Place the scrapwood spacers at the ends of the dust panels [**Photo I**]. Drill and countersink screw holes through the dust panels into the divider [**Drawing 2**], and drive the screws.

2 Lay one side assembly (A/B/C/D/E) on padded sawhorses, dadoes facing up. Without gluing, fit the bottom (shallow) dust panel (H/I/J/K) into the bottom dado of the side assembly [**Drawing 2**]. Place another dust panel temporarily in the middle dado.

5 TOP DUST PANEL DETAIL



6 DRESSER BACK VIEW



3 Without gluing, insert the tenon of the front rail (F) into the mortise in the front leg (A) [**Drawing 2**]. Then, place the other side assembly on the rail and dust panels. Check the fit of all parts [**Drawing 2**].

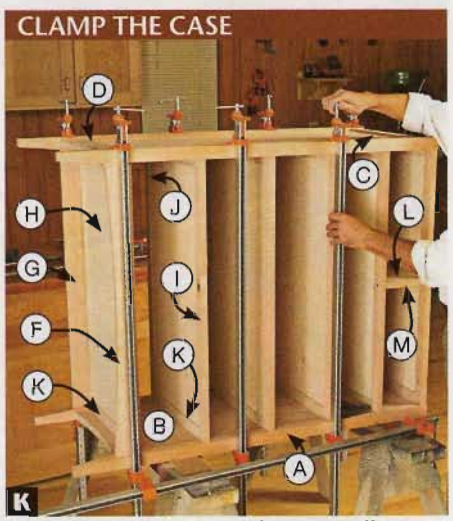
4 Lift off the top side assembly (A/B/C/D/E), and remove the front rail (F). Apply glue to the *front edge only* of the bottom dust panel (H/I/J/K). Then, put the front rail back in position and replace the side assembly on top. Square and clamp the case, and then clamp the front rail to the dust panel [**Photo J**].

5 Lift off the top side assembly (A/B/C/D/E), the front rail/bottom dust panel assembly (F/H/I/J/K), and the other dust panel (H/I/J/K). Apply glue to the dadoes and mortises in the side assembly on the sawhorses. Then, with a helper, position the front rail/bottom dust panel assembly, the back rail (G), three dust panels, and the dust panel/divider assembly (H/I/J/K/L/M) on the side assembly [**Drawing 2**]. Glue and install the other side assembly. Square the case assembly, and clamp [**Photo K**].

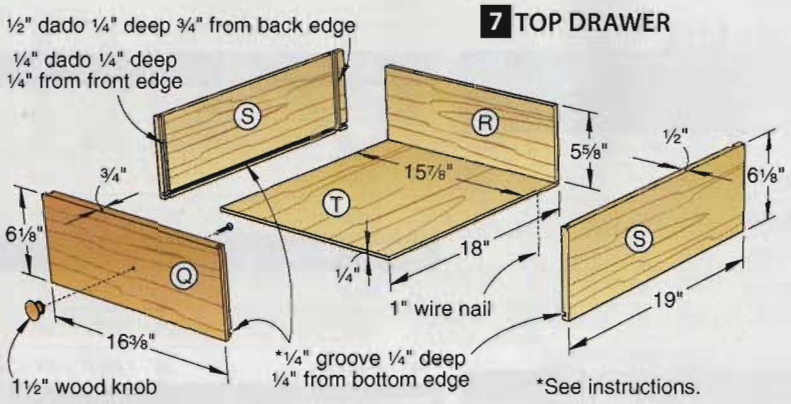
6 Edge-glue ¾" material to make a slightly oversize blank for the top (O). Rip and trim the top to size.

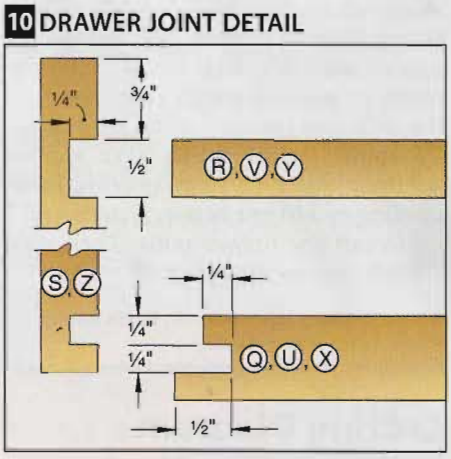
7 Tilt your tablesaw blade to 37° from vertical, and cut the bevels on both ends and front edge of the top (O) [**Drawing 2**]. Rout a ⅛" round-over on the beveled edges. Finish-sand the top.

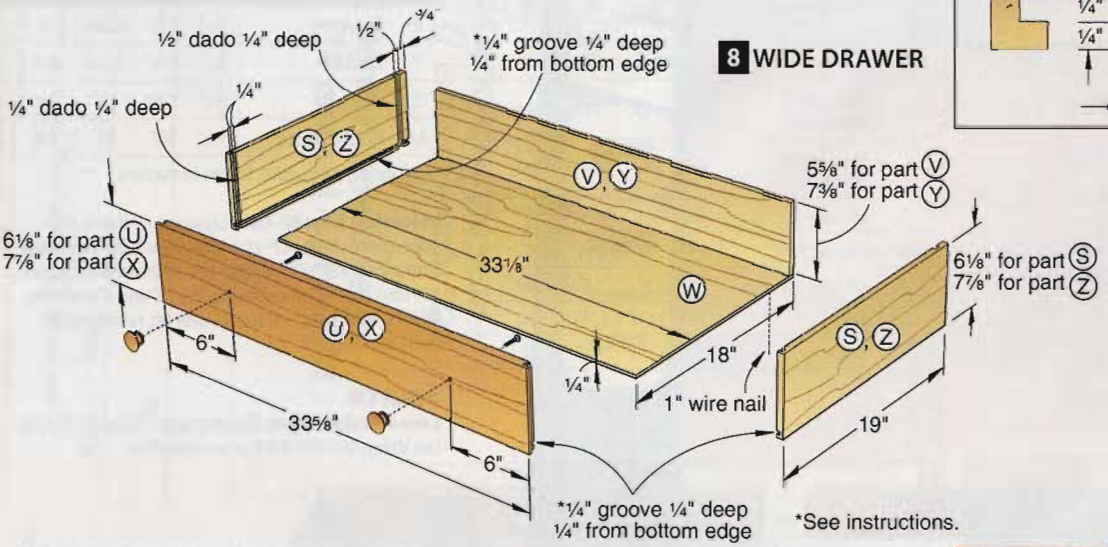
8 Cut the back (P) to size. Install the top (O) and back (P) [**Drawings 2, 6**].

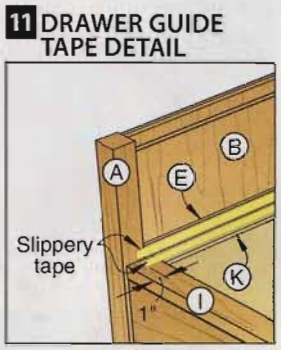


Assemble the case on sawhorses to allow space for clamping. Clamp the assembly evenly at the front and back.









Build the drawers

1 Cut the drawer fronts (Q, U, X), backs (R, V, Y), sides (S, Z), and bottoms (T, W) to size [**Drawings 7, 8**].

2 Set up your tablesaw with a ¼" dado blade, and machine the fronts (Q, U, X) and sides (S, Z), as shown in Steps 1–3 of **Drawing 9**. Change to a ½" dado blade, and make the cut at the back of the drawer sides, as shown in Step 4. The front, side, and back joints assemble as shown in **Drawing 10**.

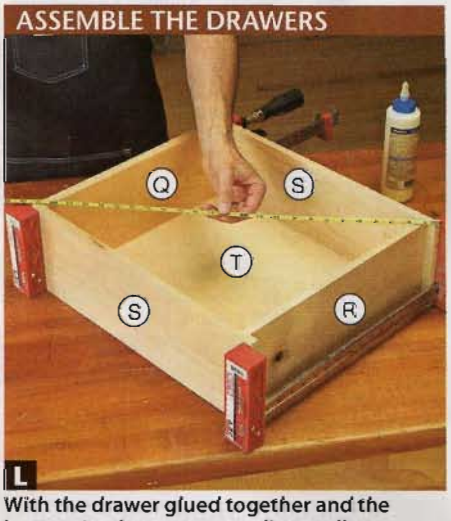
3 Cut a groove as wide as the thickness of the plywood drawer bottoms (T, W) in the drawer fronts (Q, U, X) and sides (S, Z). Locate the top of the groove the same distance from the top edge of the fronts and sides as the width of the drawer backs (R, V, Y) [**Drawings 7, 8**].

4 Glue the drawer fronts (Q, U, X) and backs (R, V, Y) to the sides (S, Z) [**Drawings 7, 8**]. Slide the bottoms (T, W) into the grooves in the sides and fronts, but do not glue them. Square the drawers, and then clamp the joints [**Photo L**]. Attach the bottoms to the backs (R, V, Y) with wire nails.

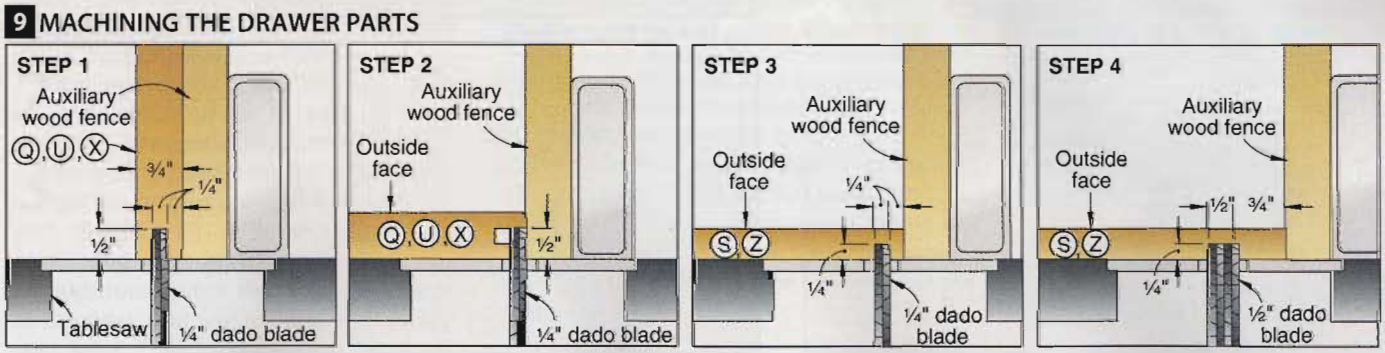
5 Lay out and drill mounting holes on the drawer fronts (Q, U, X), sized for the knobs you have chosen. Finish-sand the drawers.

Complete the dresser

1 Cut the drawer stops (AA) to size, and glue them to the dust panel back rails (J) [**Drawing 2**]. Apply low-friction slippery tape to help the drawers slide smoothly [**Drawings 11**].



With the drawer glued together and the bottom in place, measure diagonally to ensure square. Adjust as needed, and clamp.



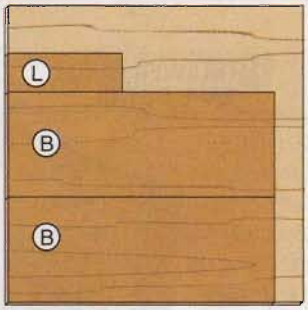
2 Inspect the case and drawers, and touch up the finish-sanding as necessary. Stain as desired. (We stained the dresser with Minwax no. 607 Cherrywood gel stain to match other pieces in the bedroom suite.)

3 Apply a clear finish. (We applied three coats of satin polyurethane, sanding to 320 grit between coats.)

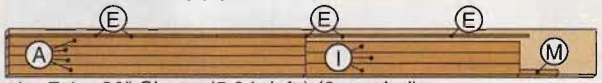
4 Install the drawer pulls. Then slide the drawers into place.

Written by **Larry Johnston** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine; Lorna Johnson**

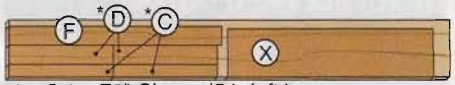
Cutting Diagram



¾ x 48 x 48" Cherry plywood



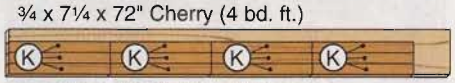
¾ x 7¼ x 96" Cherry (5.3 bd. ft.) (2 needed)



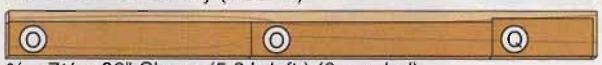
¾ x 9¼ x 72" Cherry (5 bd. ft.)

*Plane or resaw to the thickness listed in the Materials List.

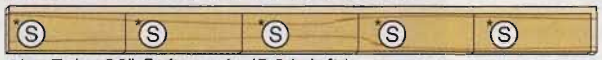
¾ x 7¼ x 72" Cherry (4 bd. ft.)



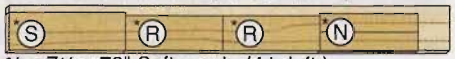
¾ x 7¼ x 72" Cherry (4 bd. ft.)



¾ x 7¼ x 96" Cherry (5.3 bd. ft.) (2 needed)

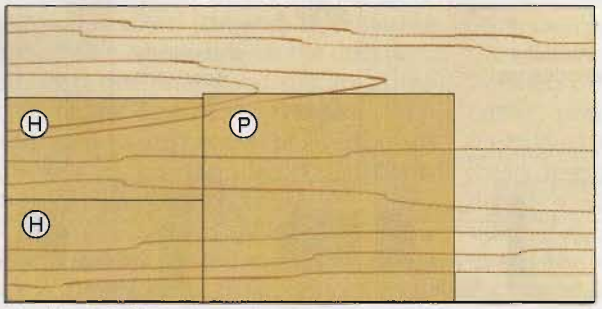


¾ x 7¼ x 96" Soft maple (5.3 bd. ft.)



¾ x 7¼ x 72" Soft maple (4 bd. ft.)

¾ x 7¼ x 72" Cherry (4 bd. ft.)



¼ x 48 x 96" Birch plywood

Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
Side assemblies						
A*	legs	1½"	1½"	48½"	C	4
B	side panels	¾"	17"	43¼"	CP	2
C	upper side rails	¼"	2"	17"	C	2
D*	lower side rails	¼"	3"	17"	C	2
E	drawer spacers	¼"	¾"	17"	C	10
F	front rail	¾"	3"	34¾"	C	1
G	back rail	¾"	2¼"	34¾"	C	1
Case						
H	dust panels	¼"	16½"	32"	BP	6
I	dust panel front rails	¾"	1¾"	35"	C	6
J	dust panel back rails	¾"	1½"	35"	SM	6
K	dust panel end rails	¾"	1¾"	16½"	SM	12
L	divider	¾"	6¼"	18½"	CP	1
M	divider trim	¾"	¾"	6¼"	C	1
N	divider spacers	¼"	3"	16"	SM	2
O*	top	¾"	21¼"	39¼"	EC	1
P	back	¼"	33¾"	41"	BP	1
Top drawers						
Q	fronts	¾"	6⅛"	16⅜"	C	2
R	backs	½"	5⅝"	15⅞"	SM	2
S	sides	½"	6⅛"	19"	SM	6
T	bottoms	¼"	15⅞"	18"	BP	2
Shallow drawer						
U	front	¾"	6⅛"	33⅝"	C	1
V	back	½"	5⅝"	33⅛"	SM	1
W	bottoms	¼"	18"	33⅛"	BP	4
Deep drawers						
X	fronts	¾"	7⅞"	33⅝"	C	3
Y	backs	½"	7⅜"	33⅛"	SM	3
Z	sides	½"	7⅞"	19"	SM	6
AA	drawer stops	¾"	¾"	3"	SM	6

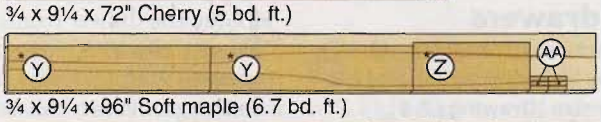
*Parts initially cut oversize. See the instructions.

Materials key: BP–birch plywood, C–cherry, EC–edge-glued cherry, CP–cherry plywood, SM–soft maple.
Supplies: #8x¾", 1¼", and 1¾" flathead wood screws, #20 biscuits, 1½" wood knobs (10), ½" and 1" wire nails.
Blade and bits: ⅛" round-over bit, rabbeting bit, flush-trim bit, dado set.

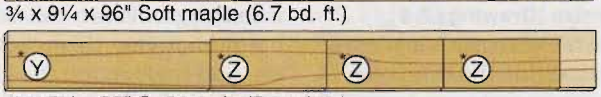
Source

Low-friction tape: Slippery tape, 25U04.01, $12.50, Lee Valley, 800-871-8158 or leevalley.com.

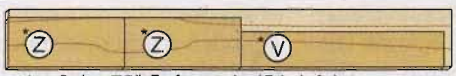
¾ x 9¼ x 72" Cherry (5 bd. ft.)



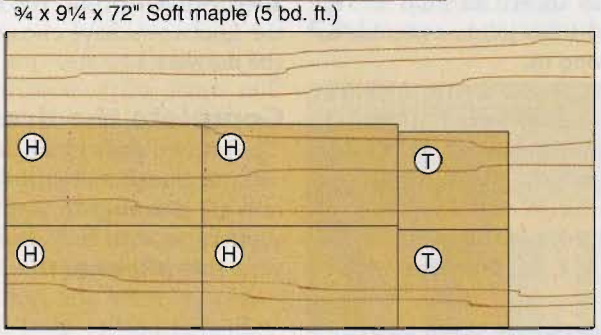
¾ x 9¼ x 96" Soft maple (6.7 bd. ft.)



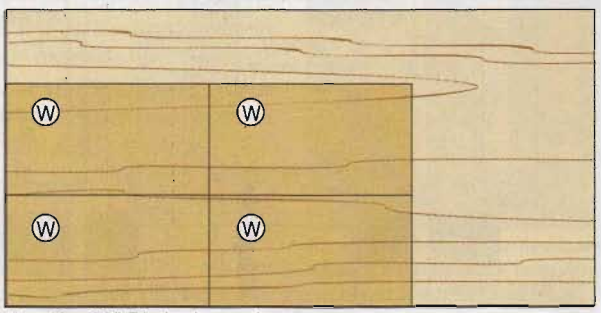
¾ x 9¼ x 96" Soft maple (6.7 bd. ft.)



¾ x 9¼ x 72" Soft maple (5 bd. ft.)



¼ x 48 x 96" Birch plywood



¼ x 48 x 96" Birch plywood

Dresser-top Valet

Here's an accessory that dresses up your dresser and adds storage space at the same time. It goes together quickly with biscuit joinery and features a pair of easy-to-build drawers. The valet matches the dresser on *page 34*, but would look great in any setting.

PROJECT HIGHLIGHTS

- Overall dimensions: 29¼" wide × 16¼" deep × 5" high.
- Two drawers—each with a hidden compartment—hold small items.
- Materials needed: Cherry, ⅞", ¾"; soft maple, ¾", ½"; and birch plywood, ¼".

Start with the case parts

1 Joint and edge-glue cherry boards ⅞" thick or thicker to make two 16½×36" blanks for the top (A), bottom (B), sides (C), and divider (D) [**Drawing 1**].

***Quick Tip!** Glue up a panel in stages for planing.* To make each blank, start with three 5½"-wide boards. The three-wide glue-up won't go through most home-shop planers, so edge-glue two boards into a panel, and then plane it to ¾" thick. Plane the third board to the same thickness, and then edge-glue it to the panel, keeping the joint flush.

2 Rip and crosscut the top (A) from one blank and the bottom (B) from the other [**Materials List**, *page 43*].

3 Set your tablesaw rip fence 3½" from the blade, and crosscut the sides (C) and divider (D) to length from the remaining edge-glued stock. Crosscut an additional piece about the same size as the sides; you will make it into a story stick later. Then, to safely rip the short parts to finished width, cut them cross-cut-style, using your miter gauge.

4 Tilt your tablesaw blade to 37° from vertical, and cut the bevels along the bottom edge on both ends, and then the front edge, of the top (A) [**Drawings 1** and **1a**]. Rout the ⅛" round-over along the top of the beveled edges.

5 Change to a ⅜" round-over bit, and shape the top of the ends and front edge of the bottom (B) [**Drawing 1**].

Get ready for biscuits

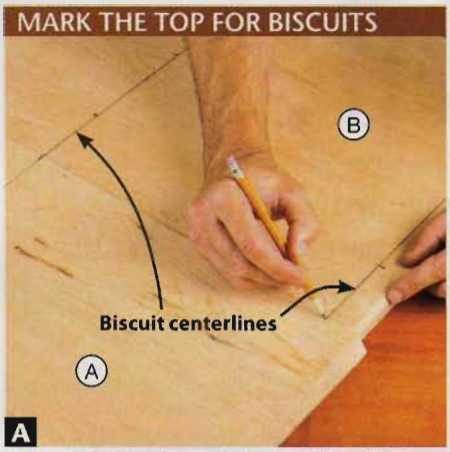
1 Make a story stick for the biscuit joints [**Drawing 1, Skill Builder**] on the extra side (C). Label the back edge.

SKILL BUILDER

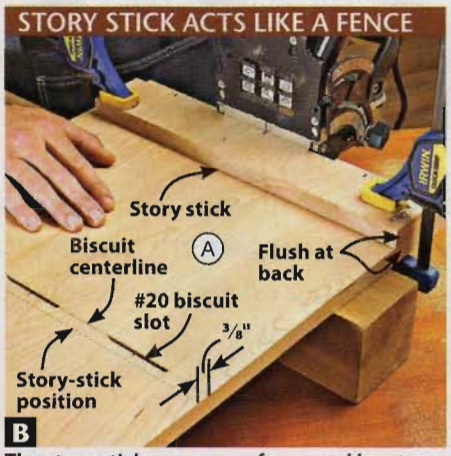
Here's a story you can stick to

A story stick helps you lay out repetitive measurements, such as the biscuit locations on the valet, quickly and accurately. Instead of measuring and marking the locations separately, lay them out once on a piece of scrapwood, as shown at *right*.

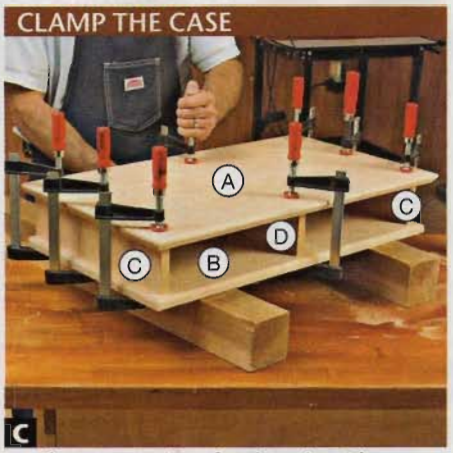
Then position the story stick on or against the project part, and transfer the layout marks to the workpiece. For the valet, we put the story stick to work as a fence, too, when plunging biscuit slots in the top and bottom [**Photo B**].



With the back edges of the top (A) and bottom (B) aligned at the center, mark the biscuit centerlines on the top.



The story stick serves as a fence and locator for cutting the biscuit slots. Align the guide mark on the joiner with the story-stick mark.



Set the case on risers for clamping. Place clamps at the biscuit locations on the sides (C) and at the ends of the divider (D).

2 On the top (inside) face of the bottom (B), draw biscuit centerlines across the middle and 1⅛" from each end [**Drawing 1**].

3 Draw a biscuit centerline across the middle of the top (A) on the inside face. On your workbench, bring the back edges of the top and bottom (B) together, and align them at the center. Transfer the locations of the other biscuit centerlines to the top [**Photo A**], and lay out the lines on the top.

4 Adjust your biscuit joiner to cut a #20 slot. Place the marked edge of the story stick ⅜" from the middle centerline on the top (A), and clamp. With the biscuit joiner vertical, press its base against the story stick, and then plunge a biscuit slot at each biscuit location on the story stick [**Photo B**]. Repeat for all the biscuit centerlines on the top and bottom (B), always aligning the story stick flush with the back edge of the part.

5 Transfer the biscuit locations from the story stick to the top and bottom edges of the sides (C), again keeping the backs flush.

6 Cut ¼" off the back edge of the story stick. Then, align the new back edge with the back of the divider (D), and mark the biscuit locations on the top and bottom edges of the divider.

7 Adjust the biscuit-joiner fence to center slots on the edges of the sides (C) and divider (D). Clamp each part to your workbench, and plunge the three slots in each edge.

Build the case

1 Set up your table-mounted router with a ¼" rabbeting bit or a straight bit and a fence, and form the rabbets along the back inside edge of each side (C) [**Drawing 1**].

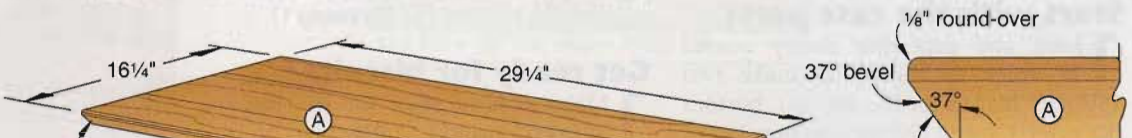
2 Finish-sand the top (A), bottom (B), sides (C), and divider (D) to 220 grit.

3 Apply glue to the biscuit slots in the bottom (B), insert biscuits, and assemble the sides (C) and divider (D) [**Drawing 1**]. Then, apply glue to the slots in the sides and divider, insert biscuits, and attach the top (A) [**Drawing 1**].

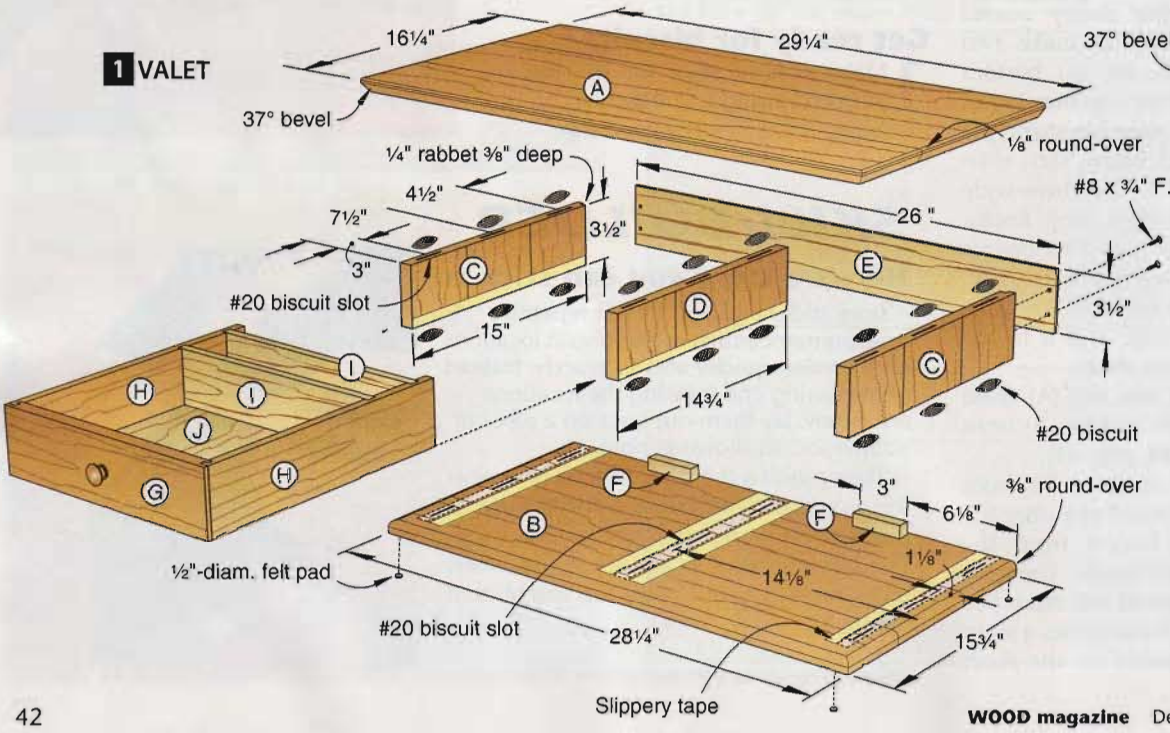
4 Make sure the sides (C) fit flush with the back edge of the bottom (B) and the divider (D) sits ¼" from the edge. Then, clamp the case [**Photo C**].

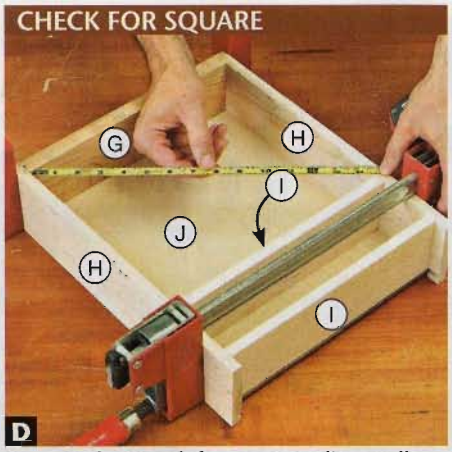
5 Cut the back (E) to size. Drill and countersink screw holes in the back. (For #8 screws, drill 5/32" shank holes and 7/64" pilot holes.) Set the back aside.

1a TOP PROFILE DETAIL

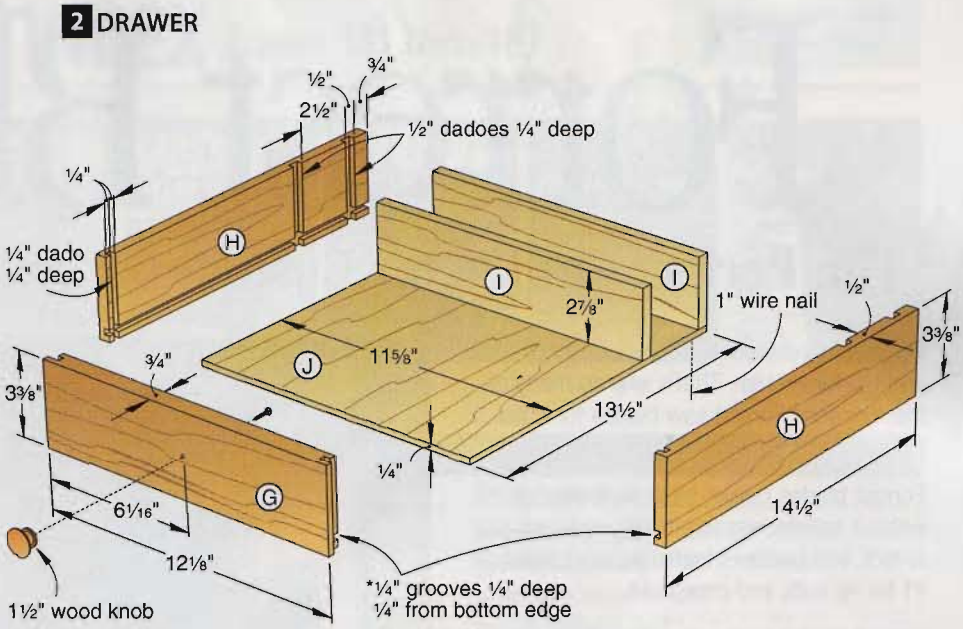


1 VALET





Measure from each front corner diagonally to the corner of the false back; the measurements must be equal. Clamp the drawers.



*See instructions.

Build a pair of drawers

1 Cut the drawer stops (F), drawer fronts (G), drawer sides (H), drawer backs (I), and drawer bottoms (J) to size.

2 Set up your tablesaw with a ¼" dado blade, and machine the fronts (G) and sides (H), as shown in Steps 1–3 of **Drawing 9**, *page 39*. Change to a ½" dado blade, and cut the dado at the back of the drawer sides, as shown in Step 4. Make another dado, where shown for the second drawer back (I) [**Drawing 2**].

3 Cut a groove as wide as the thickness of the plywood drawer bottom (J) in the drawer fronts (G) and sides (H). Locate the top of the groove the same distance from the top edge of the fronts and sides as the width of the drawer back (I) [**Drawing 2**].

4 Glue the drawer fronts (G) and backs (I) to the sides (H) [**Drawing 2**]. Slide the bottoms (J) into the grooves in the sides and fronts, but do not glue them. Square the drawers, and clamp the joints [**Photo D**]. Fasten the bottoms to the rearmost backs (I) with wire nails.

5 Drill mounting holes in the drawer fronts (G) to fit your knobs [**Drawing 2**]. Finish-sand the drawers.

Wrap up the valet

1 Fit the drawers and touch-up-sand as necessary. Glue the drawer stops (F) to the bottom (B) [**Drawing 1**].

2 Stain as desired. (We stained the valet with Minwax no. 607 Cherrywood gel stain to match the dresser.)

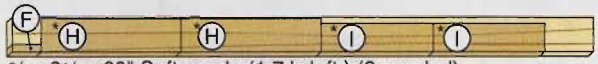
3 Apply a clear finish. (We applied three coats of satin polyurethane, sanding to 320 grit between coats.)

4 Attach slippery tape in the drawer openings [**Drawing 1**]. Place the back (E) in position, drill pilot holes in the sides (C), and drive the screws. Attach the felt pads to the bottom (B). Install the drawer knobs, and slide the drawers into the openings.

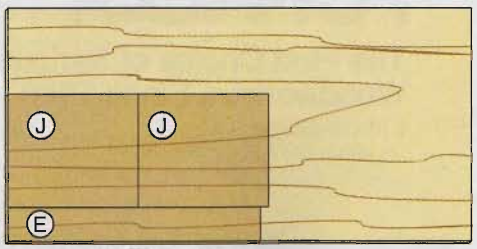
Written by **Larry Johnston** with **Kevin Boyle**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine; Lorna Johnson**

Cutting Diagram

⅞ or 1 1⁄16 x 7¼ x 96" Cherry (6.7 bd. ft.) (3 needed)
*Plane or resaw to the thickness listed in the Materials List.



¾ x 3½ x 60" Soft maple (1.7 bd. ft.) (2 needed)



¼ x 24 x 48" Birch plywood

Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
Case						
A*	top	¾"	16¼"	29¼"	EC	1
B*	bottom	¾"	15¾"	28¼"	EC	1
C*	sides	¾"	15"	3½"	EC	2
D*	divider	¾"	14¾"	3½"	EC	1
E	back	¼"	3½"	26"	BP	1
Drawers						
F	stops	¾"	¾"	3"	SM	2
G	fronts	¾"	3⅜"	12⅛"	C	2
H	sides	½"	3⅜"	14½"	SM	4
I	backs	½"	2⅞"	11⅝"	SM	4
J	bottoms	¼"	11⅝"	13½"	BP	2

*Parts initially cut oversize. See the instructions.

Materials key: C–cherry, EC–edge-glued cherry, BP–birch plywood, SM–soft maple.
Supplies: #8x¾" flathead wood screws, 1½" wood knobs (2), #20 biscuits, 1" wire nails, ½" felt pads (4).
Blade and bits: ⅛" and ⅜" round-over bits, rabbeting bit, dado set.

Source

Drawer tape: Slippery tape, 25U04.01, $12.50, Lee Valley, 800-871-8158 or leevalley.com.

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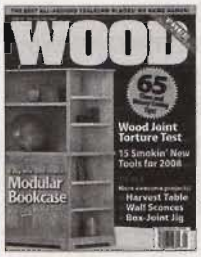
2008 WOOD® INDEX Issues 181 thru 187

For quick tips on using this index, see *page 48.*



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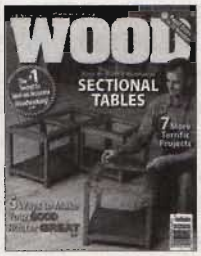

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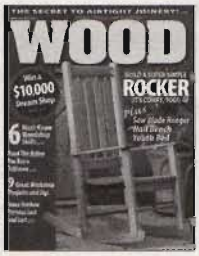

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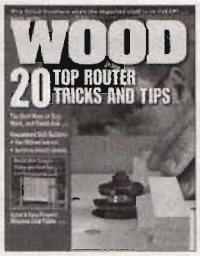

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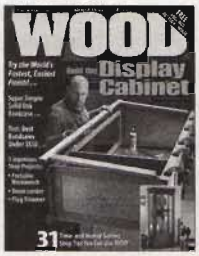

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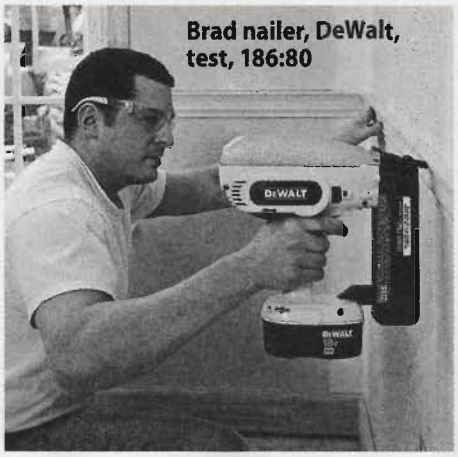

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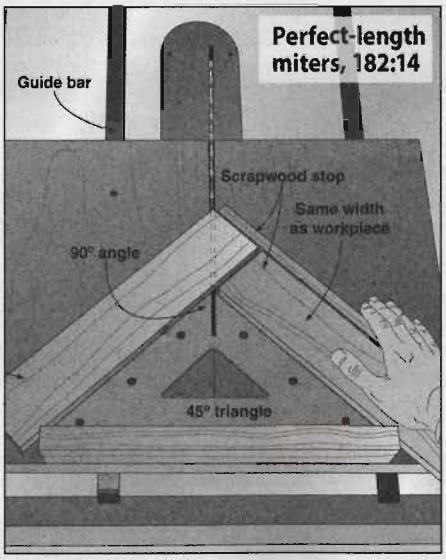

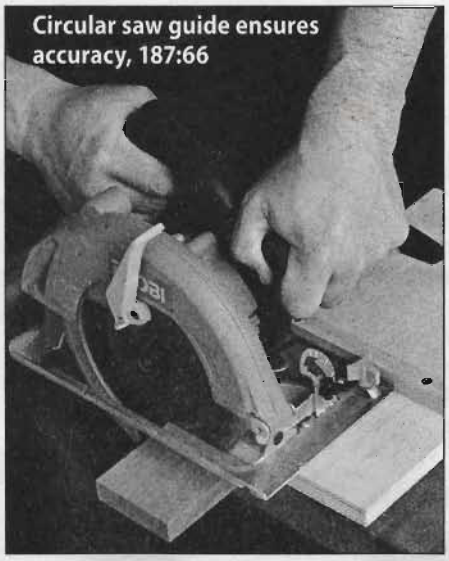

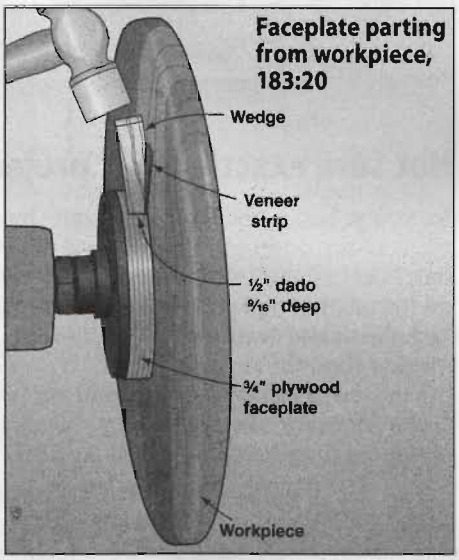

HOW TO USE THIS INDEX

This annual index includes every article and Shop Tip that appeared in *WOOD*® magazine from the December/January 2007/2008 issue through the November 2008 issue. To quickly find the article you're looking for, first identify the major index category most likely to contain the article:

- Projects (plans with step-by-step instructions),
- Tools & Materials (product reviews and guidance on using tools, accessories, hardware, and wood products),
- Techniques and Features (specific skills and articles of general interest, such as craftsman profiles), or
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Then look for the one word that best describes the project, technique, tool, or shop tip. Articles with two strong descriptors, such as a mission table, may be found under both descriptors—"mission" and "table."

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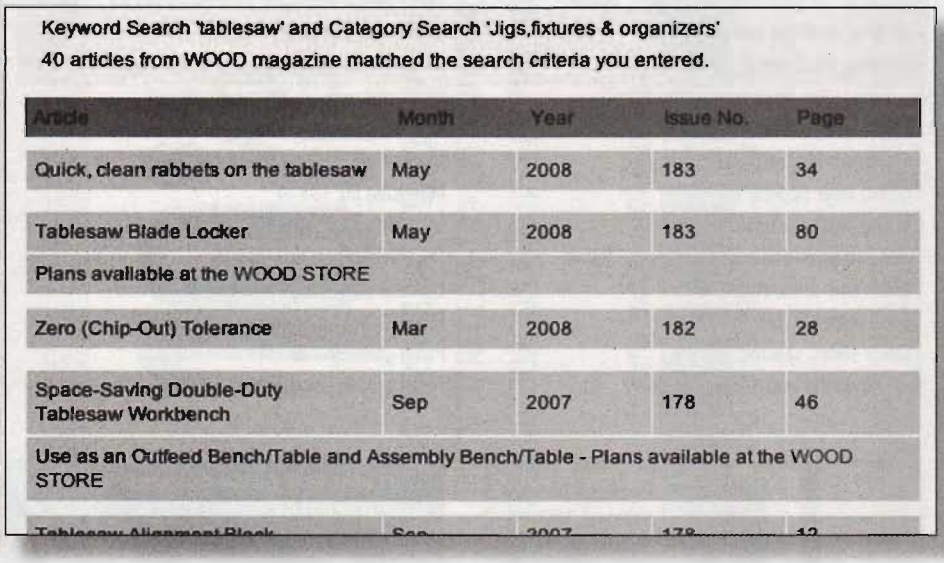
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Tablesaw Blade Locker	May	2008	183	80
Plans available at the WOOD STORE				
Zero (Chip-Out) Tolerance	Mar	2008	182	28
Space-Saving Double-Duty Tablesaw Workbench	Sep	2007	178	46
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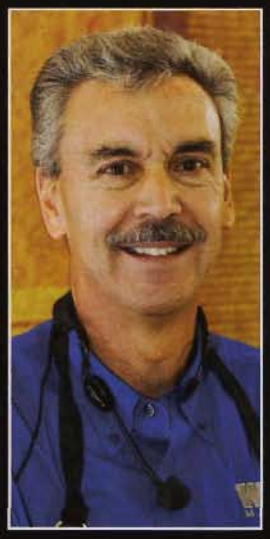

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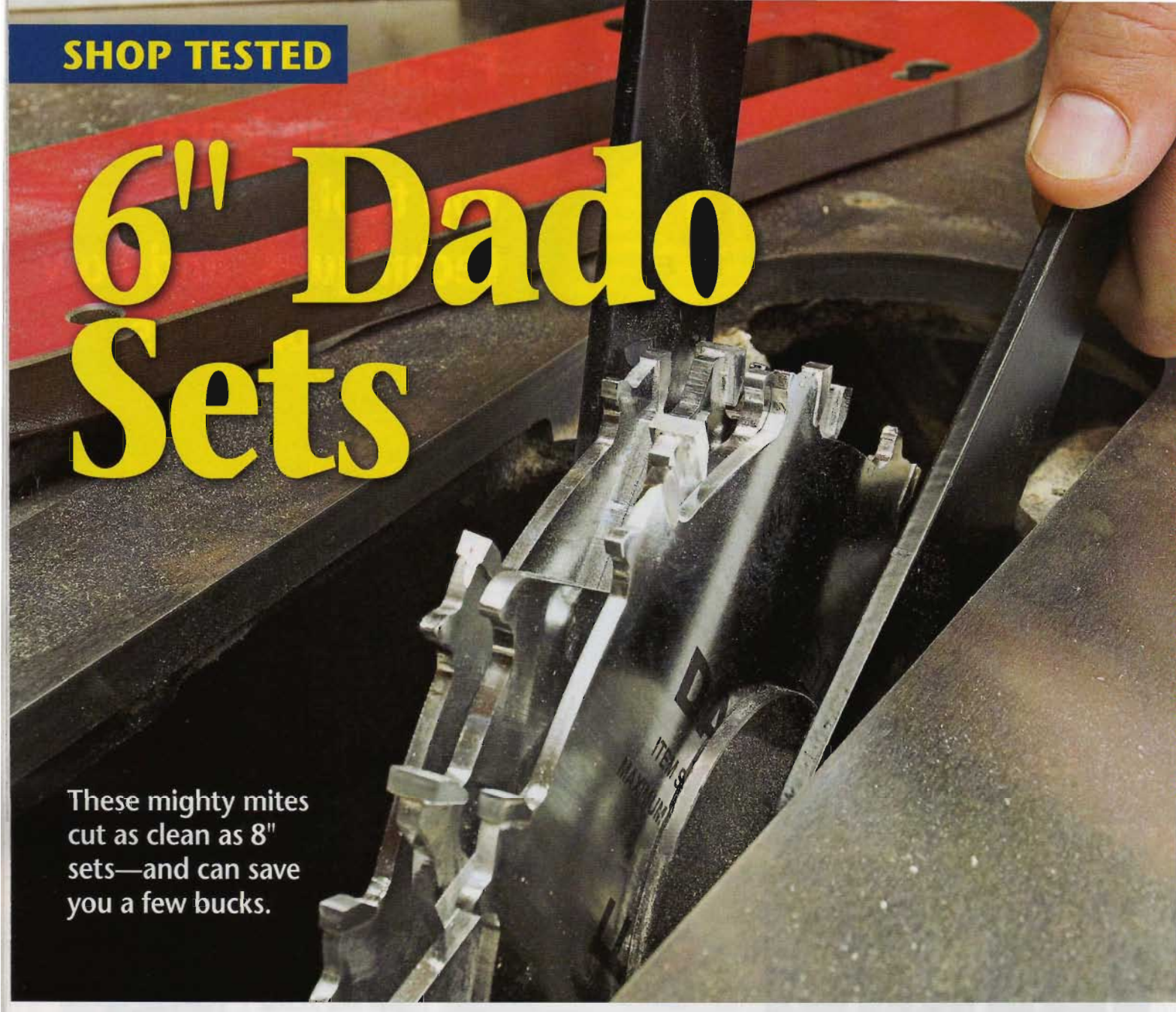
SHOP TESTED

6" Dado Sets



These mighty mites cut as clean as 8" sets—and can save you a few bucks.

Bigger isn't always better. Do the math: 6" stacked dado sets cost about $20 to $30 less than comparable 8" models, and in most cases they'll do everything their big brothers will. We seldom cut dadoes deeper than ¾", and all 13 of the 6" sets we tested beat that by ½".

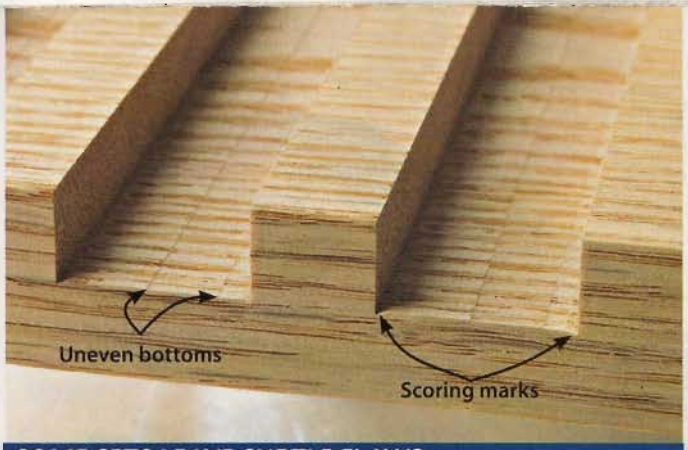
Also, if you own a lower-powered tablesaw—particularly a benchtop model—a 6" dado set stresses its motor less without sacrificing cut quality or performance. (We tested three 8" models along with the 6" sets, and found no advantage for the larger sets other than one extra inch of cutting depth.)

Buy the right set for the work you do

Before delving into the nitty-gritty of the test results, think about the materials you use most often and the types of cuts you typically make. For example, if you work only with solid wood, ignore how a set performs in plywood and melamine-coated particleboard. But if you frequently dado or rabbet tear-out-prone veneered plywood, select a set that excels at leaving clean edges in that material.

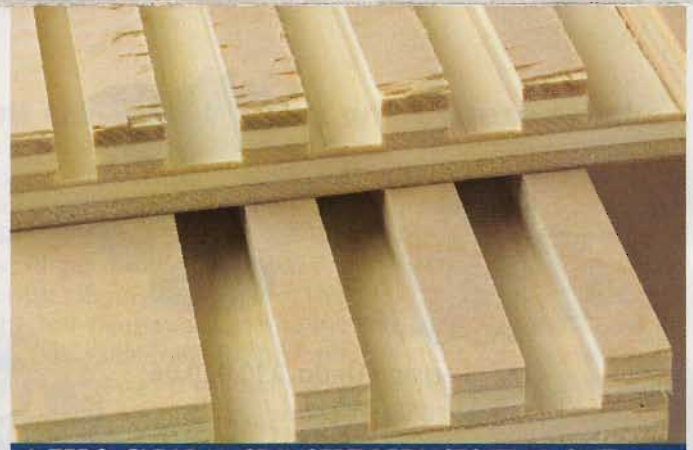
Most of these dado sets fared well in solid stock, but left significant surface tear-out on birch-veneered plywood and melamine-coated particleboard. (In fairness to the manufacturers, Amana, Everlast, and Systimatic do not recommend their 6" models for plywood or melamine; Lee Valley cautions against using its set for melamine. These companies suggest using different models with teeth designed specifically for sheet goods. Because most of us can afford just one set for doing everything, we tested all sets in all materials to see how they fared against each other.)

If you use a dado set regularly to cut tenons or half-lap joints, choose a model that leaves flat, smooth surfaces, critical for a glue joint. Many of the models we tested achieve that. Because each set's outer blades feature beveled carbide teeth (to shear the surface fibers) rather than all flat-teeth (that leave smooth bottoms but increase edge tear-out), these sets all leave tiny scoring grooves at the outer edges of the bottom of each cut. Such grooves don't diminish the joint's strength, but can make visible half-lap joints less attractive.



SOME SETS LEAVE SUBTLE FLAWS

Some chippers cut deeper than others on these ¾" dadoes, leaving uneven bottoms. The beveled teeth on the outer blades cut deeper scoring grooves in the corners.



A ZERO-CLEARANCE INSERT REDUCES TEAR-OUT

We cut these dadoes with the same wear-tested set, using a regular tablesaw throat insert (top) and zero-clearance insert. The results speak for themselves.

Some sets stay sharp longer than others

Knowing that a dado set always cuts best when it's sharp, we made test grooves and dadoes in all three materials to compare their out-of-the-box performance. These cut samples became our benchmarks for comparisons after the teeth had dulled. To put consistent wear on the carbide teeth, we used each set to cut 480 linear feet of ½"-wide, ⅜"-deep grooves in melamine particleboard. After that we made more test cuts, both with and without a zero-clearance insert. (See examples of tear-out and each set's performance results in the chart on the *next page*.) Here are some key findings:

■ **These sets emerged as leaders of the pack.** Four sets (CMT 230.020.06, Forrest Dado King DK06244, Freud Super Dado SD506, and Freud Dial-A-Width SD606) earned near-perfect grades for absence of surface tear-out right out of the box. Even after wear-testing, these sets earned top marks, especially when used with a zero-clearance insert, *below*.

■ **Get zero help for clean cuts.** Whether store-bought or shop-made, a zero-clearance insert adds critical support for wood fibers at the point where the teeth make the cut. In many cases in our test, using an insert improved a model's tear-out score by two letter grades, as shown *above right*, even though the carbide teeth had shown wear.

■ **Some sets make adjustments easy.** All 13 sets come with at least four chippers of varying thicknesses. (The top-performing sets feature four teeth per chipper instead of two.) You mix and match chippers to achieve the desired width of cut. And often you'll need to adjust the width of your dado stack in tiny increments to get an ideal fit, especially with sheet goods that typically measure less than their advertised thickness. Ten of the 13 sets include shims, but some proved easier to use than others. For example, the shims on CMT's 230.520.06 and Forrest's Dado King come marked with their thicknesses. (Forrest's shims are magnetic, so they cling to the blades but also prove tougher to remove.)

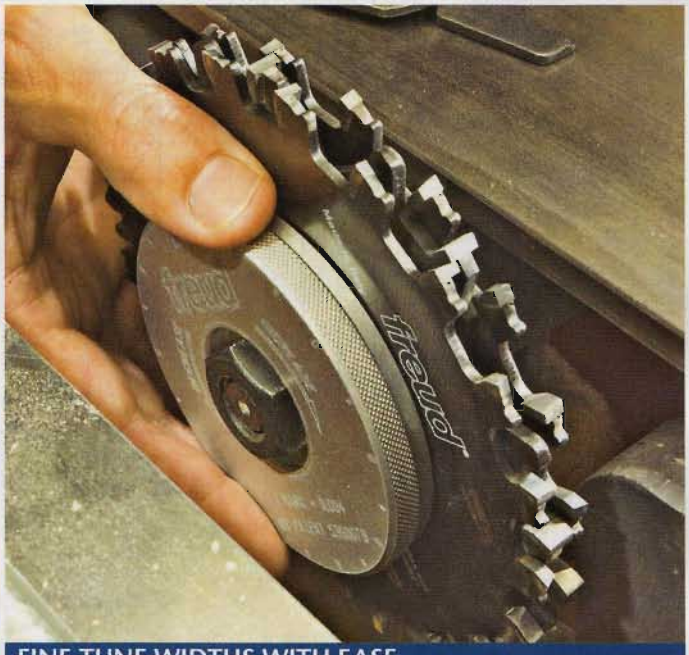
Others color code their shims. Amana's 656030 includes a handy chart that lists the correct combination of chippers and shims for any size you want. Lee Valley lists the thicknesses of its shims on the package. Freud's SD506 also uses colored shims, but its included poster—which features tons of helpful information—does not include info about shim thicknesses. Oldham's set comes with unlabeled paper shims that tear easily. Everlast and Systimatic sets do not include shims.

Freud's unique Dial-A-Width set does not use shims, but the adjustable hub on one outer blade allows you to incrementally increase or decrease the width with each click, as shown *below*. (You can reverse the hub for use on right-tilt tablesaws.) This hub limited cutting depth to ¾", but cutting a relief slot in the throat insert increased that depth to 1¼" without losing the zero-clearance fit at the front.

■ **Blades that stay sharp save you money.** Over time, all of these sets will need resharpening. We checked with several sharpening services, and found they charge from $40 to $55 to sharpen a 6" set. So if you're thinking of buying a set that showed signs of dulling and tear-out in our test, be prepared to add this cost more frequently. By the same measure, a premium set that showed no signs of dulling might go years before needing resharpening, depending on your workload.

SHOP TIP

When you resharpen a set, be sure to include all the chippers and outer blades so they maintain the same cutting depth after regrinding.

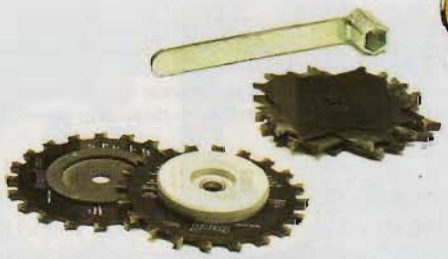


FINE-TUNE WIDTHS WITH EASE

Turning the adjustable hub on Freud's Dial-A-Width set increases or decreases the set's cutting width by .004" with each click.

CMT Precision Dado 230.020.06

Freud Super Dado SD506



Freud Dial-A-Width SD606

Forrest Dado King DKO6244

6" STACKED DADO SETS: BIG CUTS SMALL PACKAGES

MANUFACTURER (1)	MODEL	NUMBER OF TEETH ON OUTER BLADES	NUMBER OF TEETH PER CHIPPER	NUMBER OF CHIPPERS IN EACH THICKNESS				SHIMS		MAXIMUM CAPACITY, INCHES		STORAGE CASE? Y,N	PERFORMANCE RATINGS (5)													
				¼"	⅛"	1/16"	3/32" (2)	NUMBER	MATERIAL (3)	WIDTH (INCLUDING SHIMS)	DEPTH (4)		LACK OF DULLING AFTER USE	ABSENCE OF RIOGES IN BOTTOM	ABSENCE OF SCORING IN CORNERS	FLATNESS OF HALF-LAP JOINTS	EASE OF FINE-TUNING WIDTH (6)	ABSENCE OF SURFACE TEAR-OUT								
																		NEW					AFTER WEAR					
																		RED OAK		BIRCH PLYWOOD			RED OAK		BIRCH PLYWOOD		
																		CROSSCUT	RIP CUT	CROSSCUT	RIP CUT	MELAMINE	CROSSCUT	RIP CUT	CROSSCUT	RIP CUT	MELAMINE
AMANA *	656030	18	2	1	2	1	0	14	P	5⁹⁄₆₄	1¹⁹⁄₆₄	Y	B	B+	B-	A-	A-	A	A	B	B+	B+	B+	A-	C	B	B
BOSCH	PR0624DADO	24	2	1	2	1	0	5	S	5⁵⁄₆₄	1²¹⁄₆₄	Y	C+	A-	B-	A	B-	A	A	B-	B+	B	A-	B+	D	B+	C+
CMT	230.020.06	20	4	0	4	1	1*	10	P	3¹⁄₃₂	1⁹⁄₃₂	Y	A-	A-	C+	A-	B-	A	A	A-	A	A	A	A	B	A	A-
	230.520.06	20	4	0	4	1	1*	10	S	3¹⁄₃₂	1⁵⁄₁₆	Y	B-	B	B+	A	A-	A	A	B	B+	B	A-	A-	C+	B-	B-
EVERLAST *	DS6	18	2	1	2	1	0	0	N/A	13⁄16	1¹⁹⁄₆₄	Y	B+	B	C+	A	C**	A	A	C	A	B-	A	A-	C-	B+	C-
FORREST	DK06244	24	4	0	4	1	1	6	M	15⁄16	1¹⁹⁄₆₄	Y	A	A	B	A	B	A	A	A	A	A-	A	A	A	A	B+
FREUD	SD206	10	2	0	4	1	0	8	S	5⁵⁄₆₄	1²⁵⁄₆₄	Y	B	B	B+	B	B-	A	A	B+	A	B	B+	A	B-	A	C+
	SD506	20	4	0	4	1	1	10	S	1	1¹³⁄₆₄	Y	A	A-	B+	A	B-	A	A	A	A	A-	A-	A	A-	A	B+
	SD606	20	4	0	4	0	1	N/A	H	29⁄32	1¼"	Y	A	A	B+	A	A*	A	A	A-	A	A-	A	A	A-	A	B+
LEE VALLEY *	15W01.03	18	2	1	2	1	0	14	P	15⁄16	1¹⁷⁄₆₄	Y	C	A	B+	A-	A-	A	A	C	A	B-	B	C-	D	A	C-
OLDHAM	6005818	18	2	4	0	1	0	9	A	⅞	1¹⁷⁄₆₄	N	C+	A-	B	B	D	A-	A-	B-	A-	B-	A-	B+	D+	A-	C+
RIDGE CARBIDE	NW6-DM-DS	16	4	0	4	1	1	5	P	6¹⁄₆₄	1²¹⁄₆₄	Y	C	B+	B+	B	B	B-	B	C	B+	C	C-	B-	D	B+	D
SYSTIMATIC *	37142	16	2	0	4	1	0	0	N/A	13⁄16	1⁵⁄₁₈	Y	C	A	B-	B	C**	B+	B+	D	A-	C	D	B-	D-	A-	D

NOTES:

1. (*) These manufacturers do not recommend this model for use on veneer plywood or melamine-coated particleboard.
2. (*) Actually measured 5⁄64"
3. (A) Paper
   (H) Adjustable steel hub
   (M) Magnetic
   (P) Plastic
   (S) Steel
4. Measured on the same hybrid tablesaw with a ⅜"-thick throat plate insert.
   (*) Requires cutting a relief slot in the throat plate insert to allow clearance for the adjustable hub.
5. A Excellent
   B Good
   C Fair
   D Poor
6. (*) This model features an adjustable hub and does not need shims.
   (**) You must supply your own shims for these models.

Freud Pro Dado SD206

You can't go wrong with these stacks

Just as we've found in other blade tests, premium-priced models tend to rise above the field. We'd be happy to have the CMT Precision Dado 230.020.06, Forrest Dado King DK06244, Freud Super Dado SD506, and Freud Dial-A-Width SD606 in our shop because they all cut clean, flat-bottom dadoes with little to no tear-out, even after significant wear. For this they share Top Tool honors.

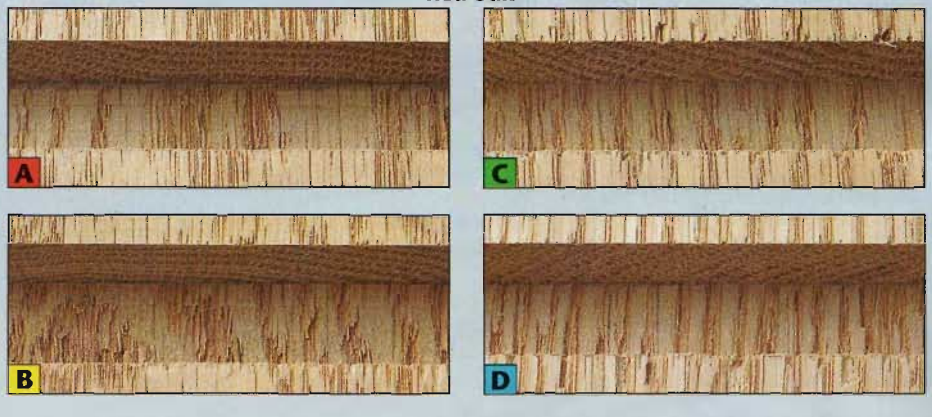
The Top Value award goes to the Freud SD206 Pro Dado set. Its cut doesn't quite equal the performance of the Top Tool sets, but it produced clean cuts in solid wood when sharp, with only minor tear-out in plywood and melamine. If you'll use your set for joinery on a handful of projects a year, this model will work well for a modest $85 investment.

HOW WE GRADED FOR DADO CUT QUALITY

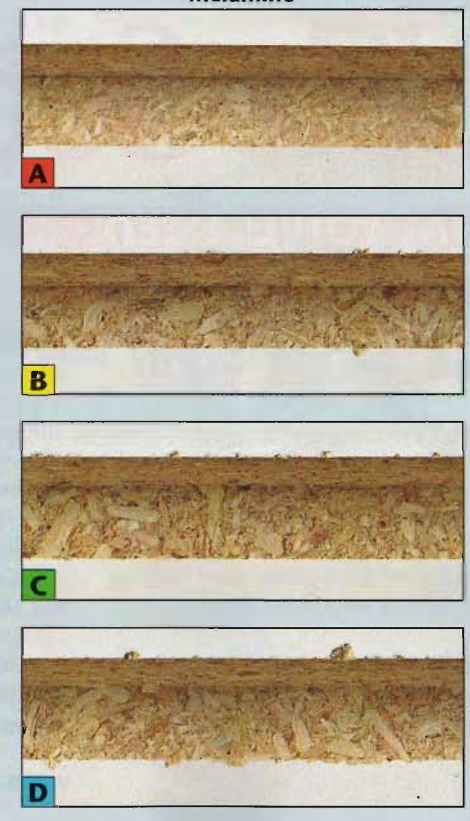
Below are examples of surface tear-out, shown in tested materials, with the grading parameters we used for all cuts.

A = No tear-out on either edge
B = Slight, spotty tear-out on either edge
C = Consistent tear-out on either edge
D = Significant, consistent tear-out on either edge

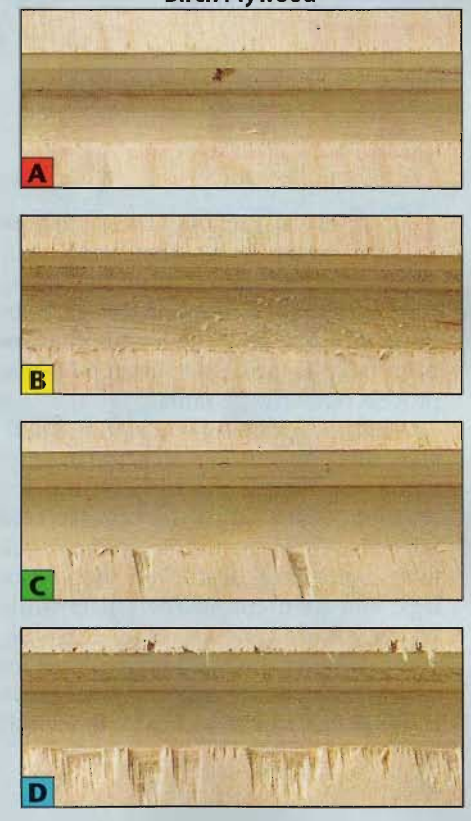
Red Oak



Melamine



Birch Plywood



	WITH ZERO-CLEARANCE INSERT							
	RED OAK		BIRCH PLYWOOD					
	CROSSCUT	RIP CUT	CROSSCUT	RIP CUT	MELAMINE	COUNTRY OF MANUFACTURE (7)	SELLING PRICE (8)
	A-	A	B	A-	B+	L	$140
	A	A	B	A	B+	S	$180
	A	A	A	A	A	G	$195
	A-	A	B	A	B	G	$170
	A	A	A-	A	B	U	$188
	A	A	A	A	A	U	$279
	B+	A	B	A	B	I	$85
	A	A	A-	A	A	I	$180
	A	A	A-	A	A-	I	$230
	A	B	C+	A	B+	L	$184
	A-	A	C	A	B-	U	$65
	B	B+	C-	A-	C	U	$190
	A-	A	C	A-	B-	C	$240

7. (C) Czech Republic
(G) Germany
(I) Italy
(L) Israel
(S) Singapore
(U) United States

8. Prices current at time of article production and do not include shipping, where applicable.

Easy and Elegant Three Table Set

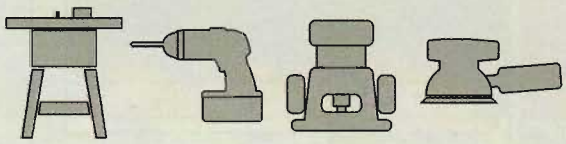
One design done three ways makes this trio of tables a perfect match.

Make any or all of these tables to create a set that suits your needs. You'll find the going easy because for most of the parts in these projects, only the length changes from table to table, but the step-by-step process remains the same.

Whatever grouping you plan to build, save time by milling all similar parts while you have a machine set up. For example, although the legs on the sofa table are longer than those on the coffee table, prepare the blanks for each set of legs, and then cut all the tapers while you've got the tablesaw set up. Likewise, you can bevel the top edging pieces for several tables at the tablesaw, then move those pieces to the router table to rout the edge profiles. This saves time and creates identical pieces for every table.

***Note**: If you make your tables from pine or oak, you'll find ready-made cove molding for parts K and L at a home center.*

WHAT YOU'LL NEED



- **Materials:** ¾" poplar boards, ½" birch plywood.
- We also used a pocket-hole jig. (About $40, see **Sources**, *page 58*.)

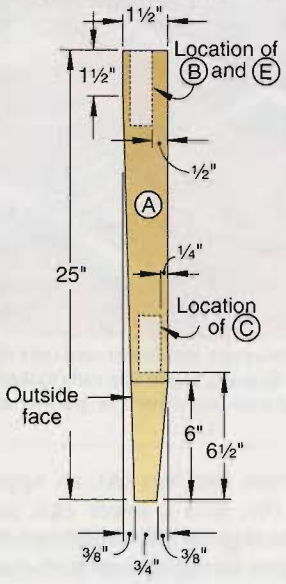
Get a leg up

1 Cut four legs (A) to the size listed in the **Materials List** on *page 58, 59, or 60* for the table(s) you're building. If you can't find solid stock 1½" thick, glue up two layers of ¾" stock. Choose pieces with color and grain that blend together well at the joint line.

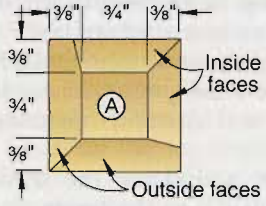
2 Now lay out the tapers on each leg [**Drawing 1a, 3a,** or **4a**]. First, label the best two adjacent faces of each leg as the *outside* faces. Then, lay out a ¾" square

End Table 19" wide × 23" deep × 25¹³⁄₁₆" high.

1a END TABLE LEG DETAIL (Left rear leg shown, right rear is a mirror image)



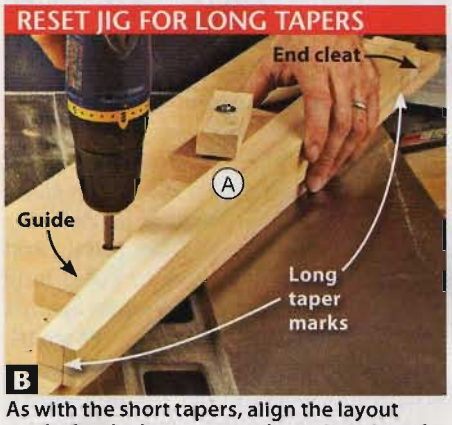
1b LEG BOTTOM VIEW (all tables)



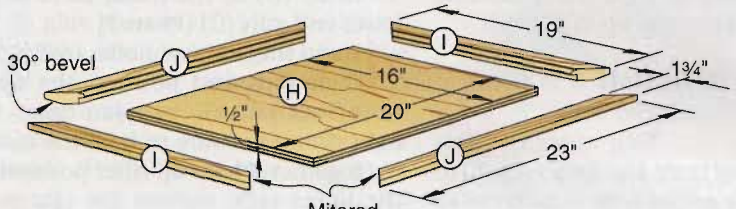
GET THOSE LEGS IN SHAPE

Cut both short tapers on each leg. If needed, reposition the guide to cut the short tapers on the legs for other tables in the set.

RESET JIG FOR LONG TAPERS



As with the short tapers, align the layout marks for the long tapers along the edge of the jig and reposition the guide assembly.



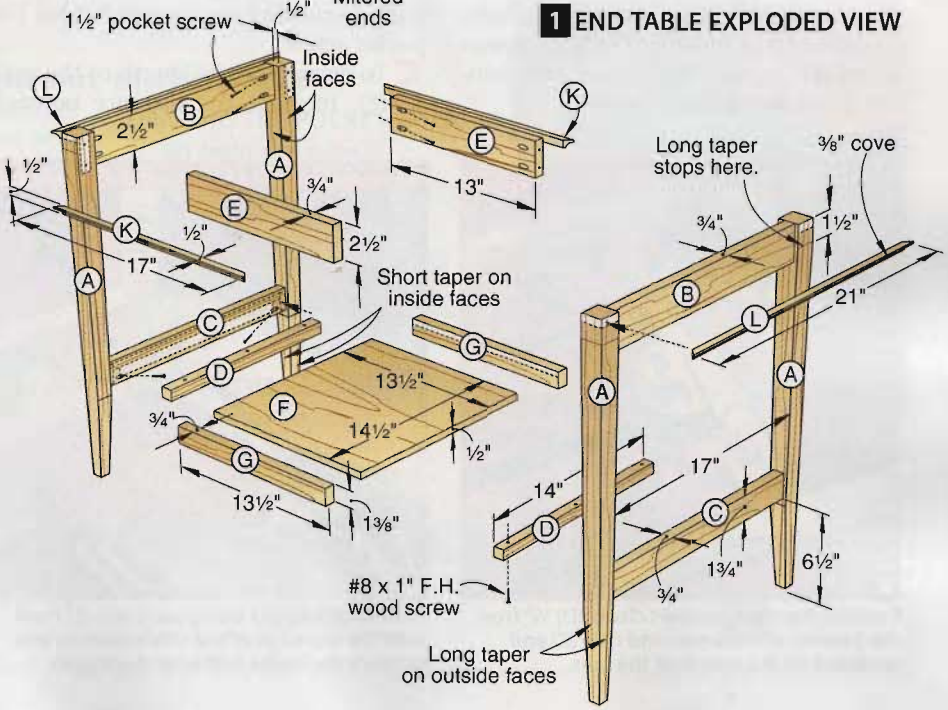
centered on the bottom end of each leg [**Drawing 1b**]. Next, mark lines on the *outside* faces (the ones you marked earlier) of each leg 1½" from the top to indicate the tops of the long tapers. Mark the tops of the short tapers on the two *inside* faces. Note that the short tapers are the same length on the end table and sofa table [**Drawings 1a** and **4a**] but are shorter on the coffee table [**Drawing 3a**].

3 You'll need a taper jig to carry the legs past the saw blade. (If you don't have one, see the Quick & Easy Jig article on *page 12*.) Align the marks for the top and bottom of the short taper along the edge of the jig. Screw down the guide, secure the leg, and cut the first taper [**Photo A**].

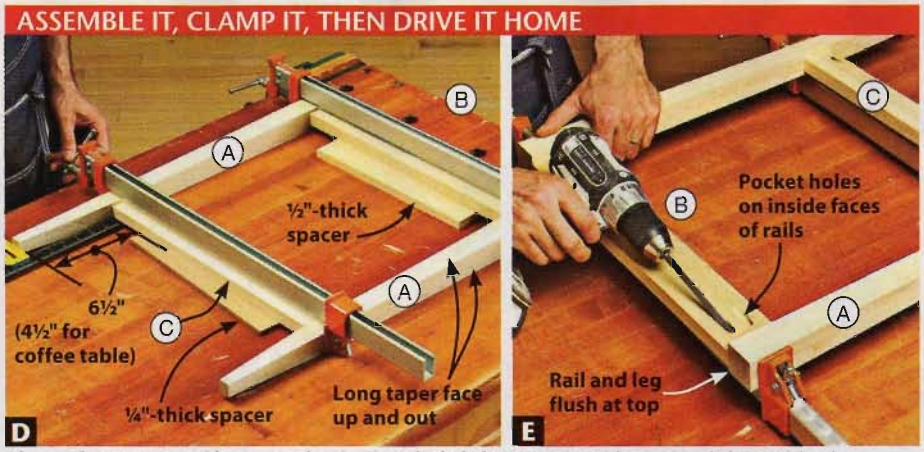
Note: *Use a zero-clearance insert to prevent the cutoff from lodging between the blade and insert plate. Also, we've removed the blade guard to allow you to see the operation. Use yours.*

4 Rotate the leg a quarter turn to cut the other short taper [**Photo A**].

1 END TABLE EXPLODED VIEW



To secure the leg when cutting the second long taper, use a spacer to fill the gap between the hold-down and the tapered leg.



Clamp the upper and lower end rails (B, C) lightly between two legs (A) while positioning the rails. Spacers under the rails establish the inset. Tighten the clamps, and then flip the assembly over and drive 1½" pocket screws through each rail into the legs.

While the jig is set up, cut the short tapers on the remaining legs.

Note: *The coffee table has shorter tapers than the other two tables. If you're building a combination of tables, adjust the placement of the guide on the jig as needed.*

5 Unscrew the guide from the jig and reposition a leg on it to cut a long taper. As before, place the guide against the leg, and screw it in place [**Photo B**]. Cut the first long taper; then place a scrapwood spacer under the hold-down when cutting the final taper [**Photo C**]. Repeat this process to cut the long tapers on the remaining legs. Use a sanding block to sand the legs up to 220 grit.

Time to establish a base

1 Cut the upper end rails (B), lower end rails (C), shelf support cleats (D), and upper front and back rails (E) to size. Drill one pocket hole in each end of the lower end rails and two pocket holes in each end of the upper rails [**Drawings 2** and **2a**]. Learn about pocket-hole joinery in the **Skill Builder**, *opposite*.

2 Retrieve two legs (A), an upper end rail (B), and a lower end rail (C). Place the legs on a flat surface with the long tapers facing up and to the outside. Clamp the upper end rail flush with the top ends of the legs and the lower end rail 6½" from the bottom of the legs [**Drawings 1a, 4a; Photo D**]. On the coffee table, this measurement is 4½" [**Drawing 3a**]. Flip the end assembly (A/B/C) over and drive the pocket screws [**Photo E**]. Repeat this assembly operation for the other end.

3 Glue and clamp the shelf support cleats (D) to the inside faces of the lower end rails (C) [**Photo F**].

4 Stand the side assemblies (A/B/C) on their tops and position the upper front/back rails (E) between them. Use light clamp pressure to hold the assembly together [**Photo G**]. After positioning the upper rails, tighten the clamps to hold everything in place and drive 1½" pocket screws.

5 To determine the length of the shelf (F), measure the distance between the lower end rails (C). To find the shelf's width, add ½" to the length of the cleat (D). Cut the shelf to these dimensions.

6 Cut two pieces of shelf edging (G) ¾" thick, 1⅜" wide, and the same length as the shelf (F). Glue and clamp the edging to the shelf with the top edges and ends flush. After the glue has cured, sand the assembly to 220 grit.

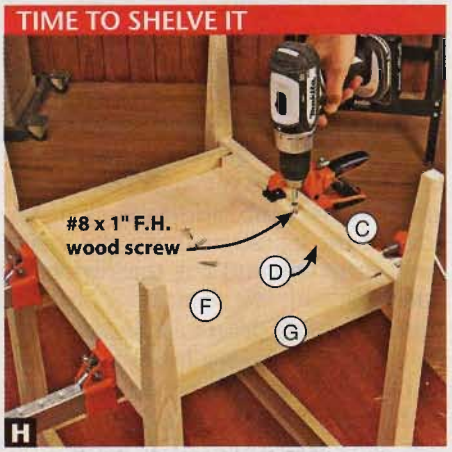
7 Center the shelf assembly (F/G) between the legs and clamp it in place [**Photo H**]. Drill 5/32" shank holes through the shelf support cleats (D) and 7/64" pilot holes ¼" deep into the shelf. Then apply glue to the cleats and screw the shelf to them.

Top it off

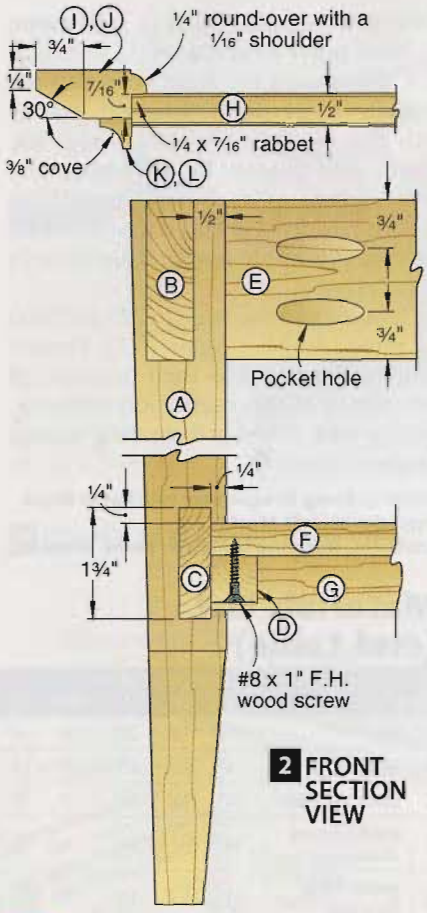
1 Cut the top (H) to match the outside dimensions of the table. Set it aside for now. From ¾×1¾" stock, cut the front/back edging (I) and end edging (J) about 1" longer than dimensioned in the **Materials List**. Make an extra piece to help set up the tablesaw and router table in the next couple of steps.

Position the shelf support cleats (D) ¼" from the bottom of the lower end rails (C) and centered on the length of the rails.

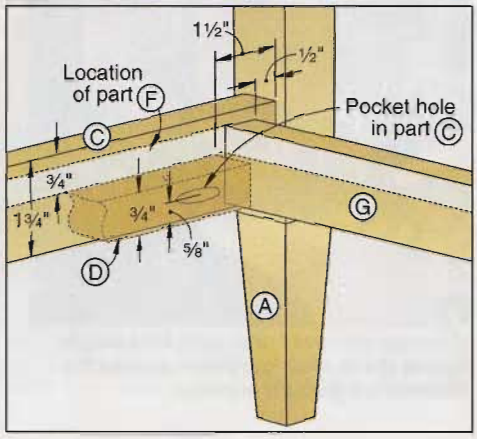
Position the upper front/back rails (E) flush with the top edge of the side assembly and ½" from the inside corner of the leg (A).



Clamp the shelf assembly (F/G) to the cleats (D) while drilling the shank and pilot holes and driving the screws.



2 FRONT SECTION VIEW



2 Tilt the tablesaw blade to 30° from vertical and set the rip fence ¼" from the blade. Rip a bevel on each length of front/back edging (I) and end edging (J) [**Drawing 2**]. Next, mount a ¼" round-over bit in the router table. Rout the round-over with a 1/16" shoulder [**Drawing 2**] on each piece of edging.

3 Tilt your tablesaw blade back to vertical, and complete the edging by cutting a rabbet to accept the top (H) [**Shop Tip** at *right*].

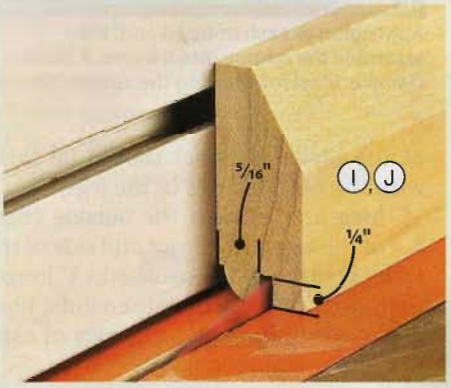
4 Miter-cut the edging (I, J) to fit around the top (H). Glue up the four pieces of edging to form a frame [**Photo I**]. While the frame dries, finish-sand the top with 220 grit. Then sand the edging assembly (I/J) to 220 grit. Use a sanding block on the top and bottom faces and the bevel to maintain the crisp edges of the profiles.

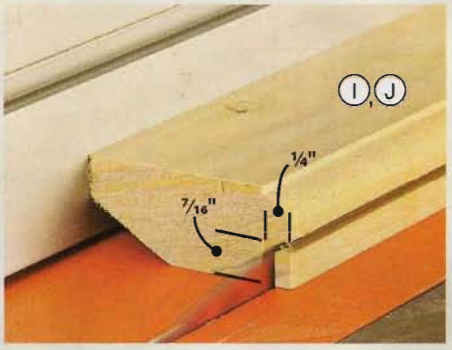
5 To glue the top (H) into the frame, apply a small bead of glue along the inside corner of the rabbet. Then clamp the frame and panel together, and allow the glue to cure. Now glue the top assembly (H/I/J) to the base. The edges

SHOP TIP

Two cuts for clean rabbets

To cut rabbets on the tablesaw, make two intersecting cuts. For the edging pieces (I, J), set the blade ¼" above the table and position the rip fence 5/16" from the blade. Cut a groove the length of each edging piece, keeping the piece tight to the rip fence, *top photo*. Then raise the blade height to 7/16" and reset the fence to make a perpendicular, intersecting cut to remove the waste, *bottom photo*. The waste falls safely to the outside of the blade.





SKILL BUILDER

Quick, strong joints come right out of the pocket

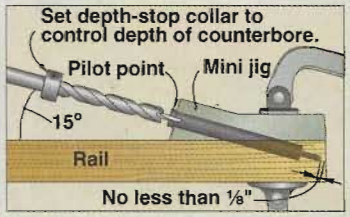
Fast, easy, and strong. That describes pocket-hole joinery. Using this method, you don't have to wait for glue to dry, so you can keep working on parts as soon as they're joined.

Making a pocket hole requires a special jig and drill bit to form a pilot hole with a deep, flat-bottomed counterbore, *top drawing*. For pieces that fit together flush, a clamp holds the pieces while you drive a pocket-hole screw into the pilot hole, *bottom drawing*. To inset one piece from another, use a spacer as shown in **Photo D**, *opposite page*.

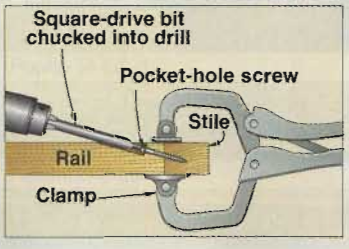
The broad, flat underside of the screwhead, shown *far right*, presses against the bottom of the hole, pulling the two pieces together. Choose fine-thread screws for use in hardwoods, and coarse-thread screws when joining softwoods.

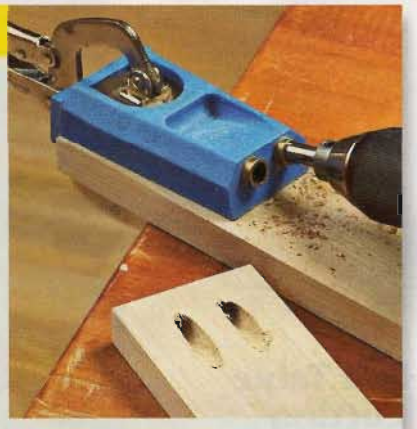
Apply glue to the mating surfaces if you want. But when one of those surfaces is end grain, as when joining the rails of the tables to the legs, the glue adds little additional strength.

DRILLING THE POCKET HOLE



DRIVING THE POCKET SCREW





Apply glue to each mitered end, then assemble the edging into a frame. A band clamp is ideal for drawing the corners closed.

Miter-cut the cove molding (K, L) to length, testing the fit of all four pieces around the table before gluing it in place.

of the plywood panel should be flush with the outside faces of the legs.

6 Measure between the outside edges of the legs at the front and side of the table. Prepare two ½×4" blanks 1" longer than each of these measurements. Rout a ⅜" cove along each long edge of each blank. Take the blanks to the tablesaw and rip away ½"-wide pieces for the front/back cove (K) and end cove (L).

7 Miter-cut the front cove (K) to length so the two short points match up exactly with the outside corners of the front legs. Clamp the cove in place temporarily below the edging (I, J) [**Drawing 2**]. Next, miter an end cove (L) to length so it fits against the front cove and the opposite short point lines up exactly with the outside corner of a rear leg. Repeat this process for the other end cove (L); then miter the back cove (K) to fit between the two end coves. Once all the coves are cut to length, glue them in place [**Photo J**].

8 Finish-sand the table to 220 grit, and apply a finish. (We used Old Masters Dark Mahogany, and then brushed on two coats of Minwax satin polyurethane, buffing with a 300-grit sanding sponge between coats.)

Written by **Craig Ruegsegger** with **Kevin Boyle**
Project design: **Jeff Mertz**
Illustrations: **Roxanne LeMoine; Lorna Johnson**

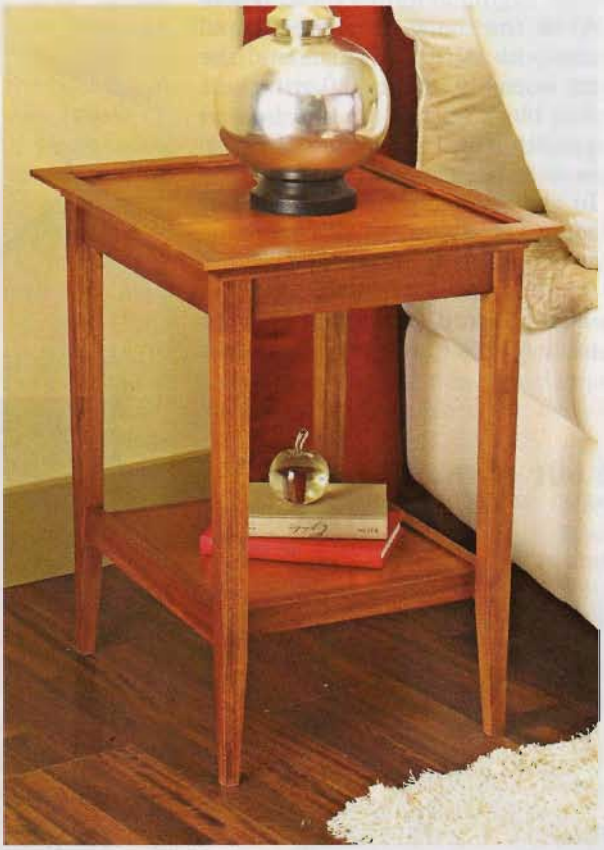
Materials List (end table)

Part		FINISHED SIZE T	W	L	Matl.	Qty.
A	legs	1½"	1½"	25"	P	4
B	upper end rails	¾"	2½"	17"	P	2
C	lower end rails	¾"	1¾"	17"	P	2
D	shelf support cleats	¾"	¾"	14"	P	2
E	upper front/ back rails	¾"	2½"	13"	P	2
F	shelf	½"	14½"	13½"	BP	1
G	shelf edging	¾"	1⅜"	13½"	P	2
H	top	½"	20"	16"	BP	1
I*	front/back edging	¾"	1¾"	19"	P	2
J*	end edging	¾"	1¾"	23"	P	2
K*	front/back cove	½"	½"	17"	P	2
L*	end cove	½"	½"	21"	P	2

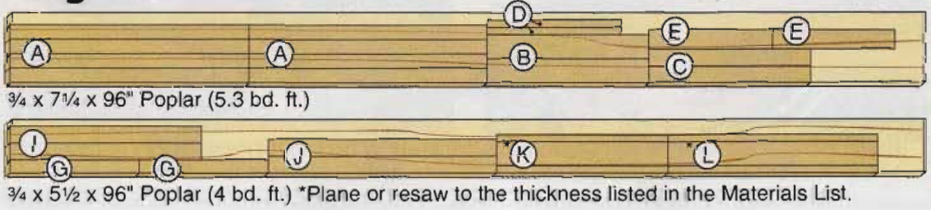
*Parts cut long initially, then mitered to fit.

Materials key: P–poplar, BP–birch plywood.
Supplies: #8×1" flathead wood screws, 1½" pocket-hole screws.
Bits: ¼" round-over, ⅜" cove router bits.

Sources: Pocket-hole jigs, such as the Kreg R3, are available at home centers and through Rockler Woodworking and Hardware, 800-279-4441, rockler.com.

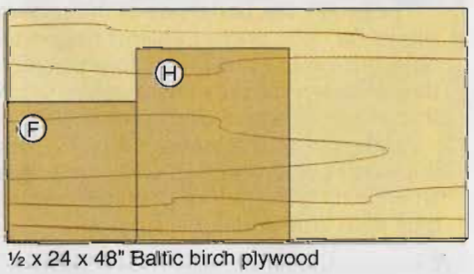


End Table Cutting Diagram



¾ x 7¼ x 96" Poplar (5.3 bd. ft.)

¾ x 5½ x 96" Poplar (4 bd. ft.) *Plane or resaw to the thickness listed in the Materials List.



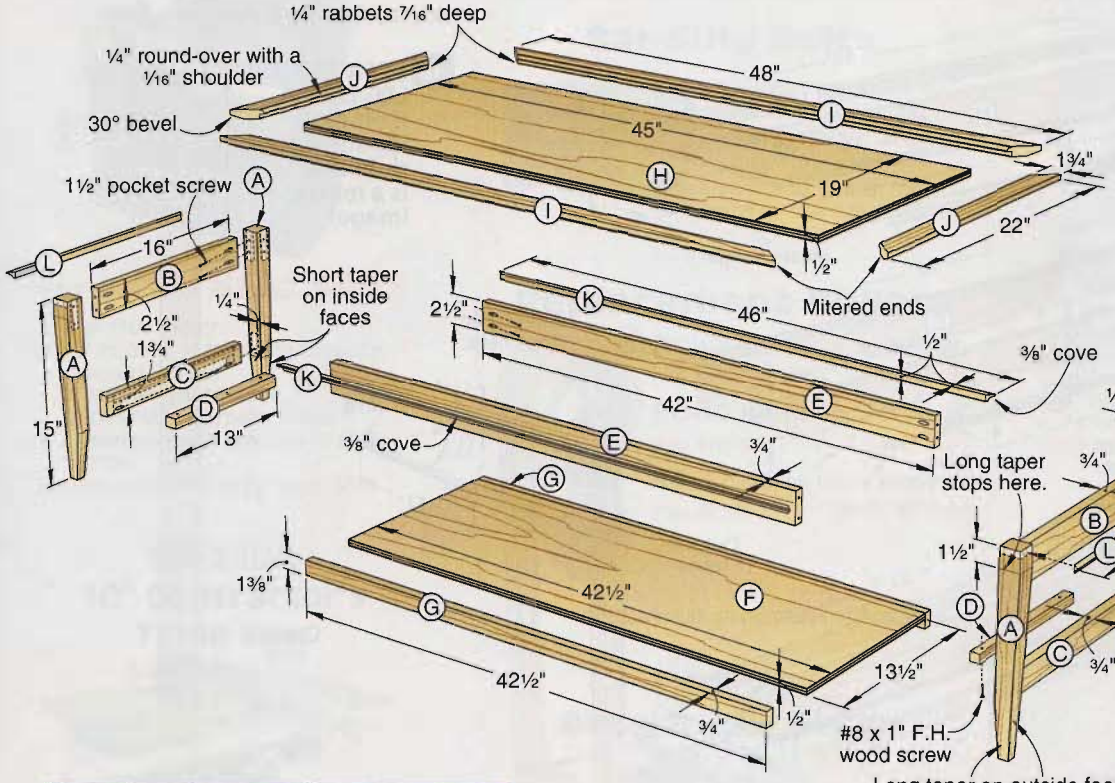
½ x 24 x 48" Baltic birch plywood

Materials List (coffee table)

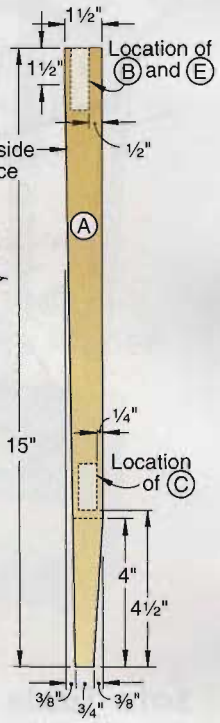
Part		FINISHED SIZE T	W	L	Matl.	Qty.
A	legs	1½"	1½"	15"	P	4
B	upper end rails	¾"	2½"	16"	P	2
C	lower end rails	¾"	1¾"	16"	P	2
D	shelf support cleats	¾"	¾"	13"	P	2
E	upper front/ back rails	¾"	2½"	42"	P	2
F	shelf	½"	13½"	42½"	BP	1
G	shelf edging	¾"	1⅜"	42½"	P	2
H	top	½"	19"	45"	BP	1
I*	front/back edging	¾"	1¾"	48"	P	2
J*	end edging	¾"	1¾"	22"	P	2
K*	front/back cove	½"	½"	46"	P	2
L*	end cove	½"	½"	20"	P	2

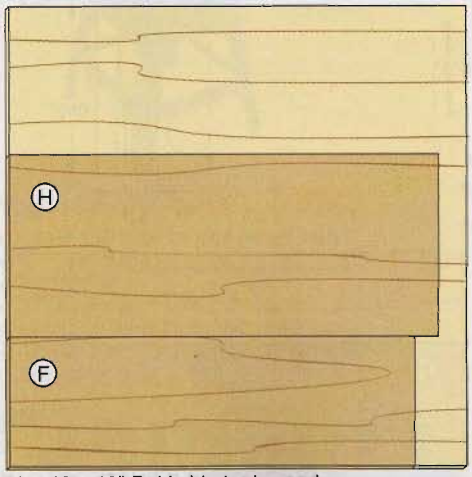
*Parts cut long initially, then mitered to fit.

3 COFFEE TABLE EXPLODED VIEW



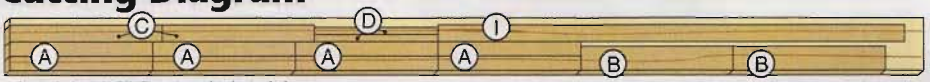
3a COFFEE TABLE LEG DETAIL (Left rear leg shown, right rear is a mirror image)



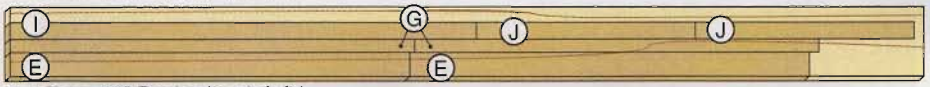


½ x 48 x 48" Baltic birch plywood

Coffee Table Cutting Diagram



¾ x 5½ x 96" Poplar (4 bd. ft.)



¾ x 7¼ x 96" Poplar (5.3 bd. ft.)

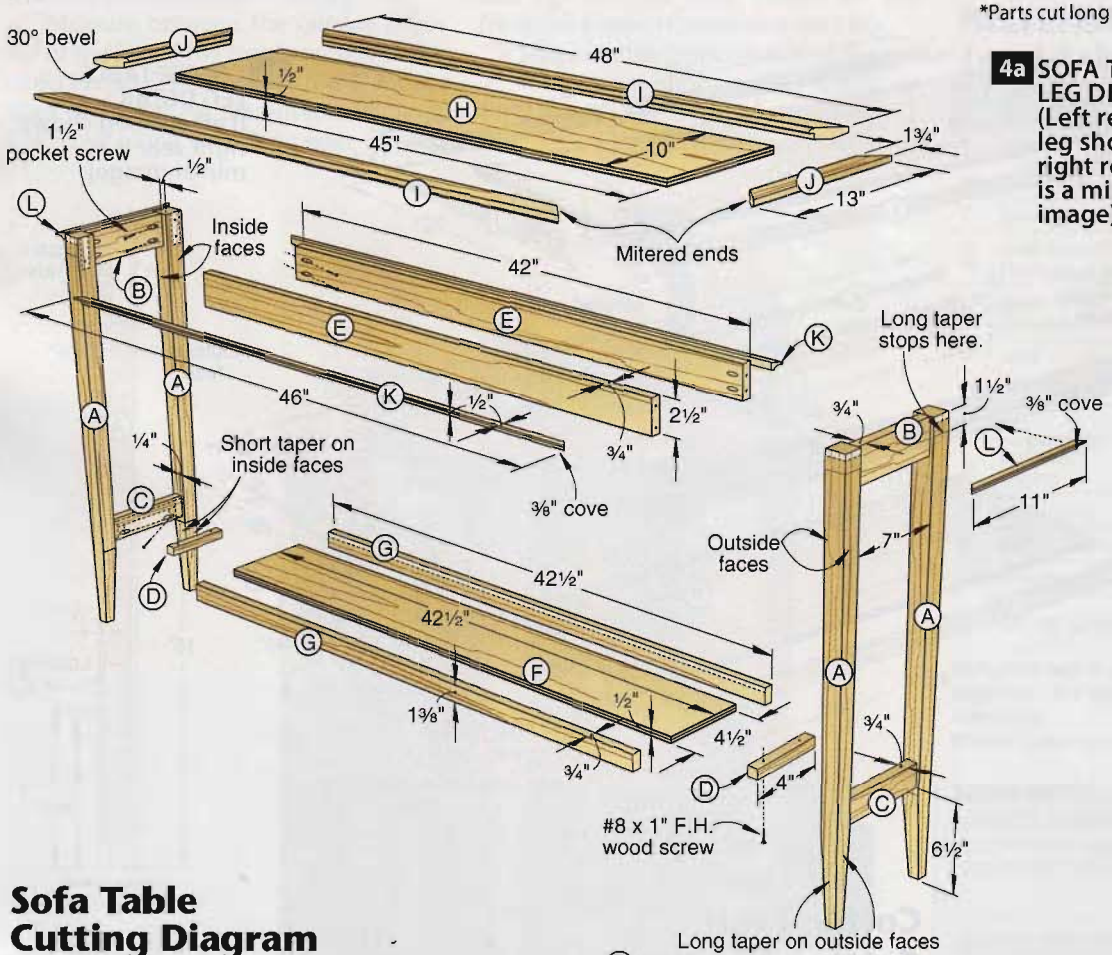
¾ x 5½ x 72" Poplar (3 bd. ft.) *Plane or resaw to the thickness listed in the Materials List.

Materials List (sofa table)

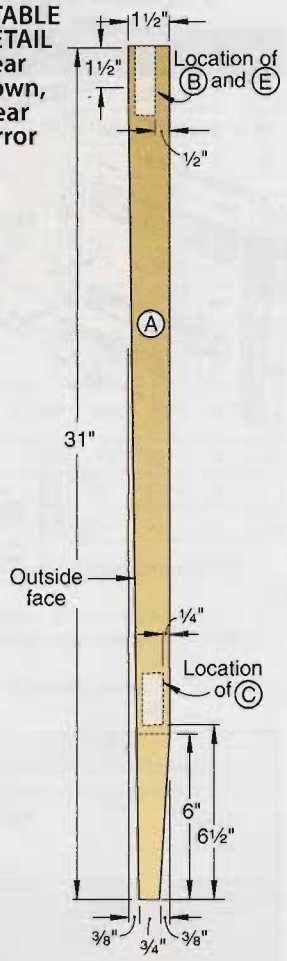
Part		FINISHED SIZE T	W	L	Matl.	Qty.
A	legs	1½"	1½"	31"	P	4
B	upper end rails	¾"	2½"	7"	P	2
C	lower end rails	¾"	1¾"	7"	P	2
D	shelf support cleats	¾"	¾"	4"	P	2
E	upper front/ back rails	¾"	2½"	42"	P	2
F	shelf	½"	4½"	42½"	BP	1
G	shelf edging	¾"	1⅜"	42½"	P	2
H	top	½"	10"	45"	BP	1
I*	front/back edging	¾"	1¾"	48"	P	2
J*	end edging	¾"	1¾"	13"	P	2
K*	front/back cove	½"	½"	46"	P	2
L*	end cove	½"	½"	11"	P	2

*Parts cut long initially, then mitered to fit.

4 SOFA TABLE EXPLODED VIEW

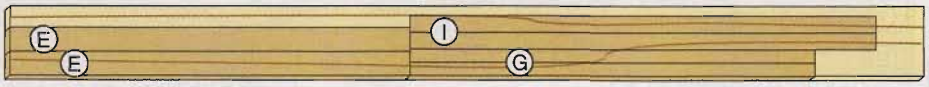


4a SOFA TABLE LEG DETAIL (Left rear leg shown, right rear is a mirror image)



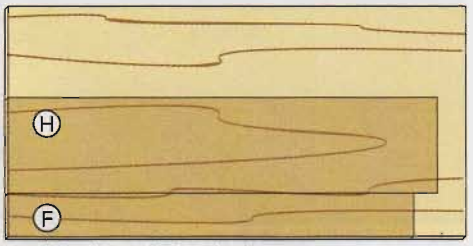
Sofa Table Cutting Diagram

¾ x 7¼ x 96" Poplar (5.3 bd. ft.)



¾ x 7¼ x 96" Poplar (5.3 bd. ft.)

¾ x 5½ x 60" Poplar (2.5 bd. ft.) *Plane or resaw to the thickness listed in the Materials List.



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- 6" Max. thickness.
- 71 lbs.

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SM-346
13" Surface Planer

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- Heavy duty construction.
- 2HP 110V motor.
- 4 Post support of cutterhead to minimize sniping.
- 2 Double edged HSS Knives.
- Self aligned knives require no knife setting.
- 8,000 RPM cutterhead speed.
- 26 FPM feed speed.
- 6" Max. thickness.
- 80 lbs.

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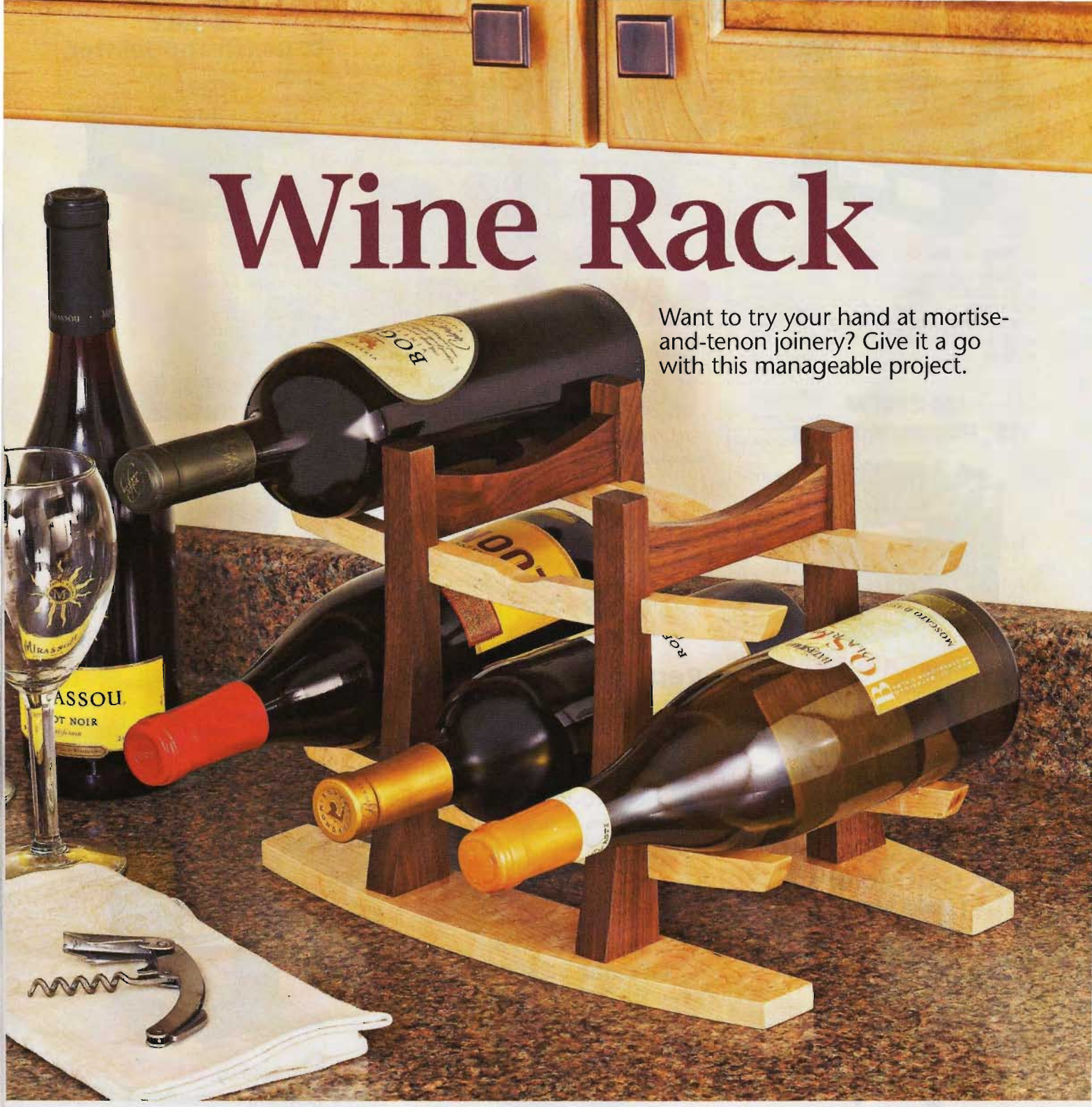
Wine Rack

Want to try your hand at mortise-and-tenon joinery? Give it a go with this manageable project.



This graceful countertop rack keeps your favorite wines at hand for dinner parties or entertaining. It has just four parts—and patterns for three of them—so you'll be able to build the rack almost as quickly as you can say *cabernet sauvignon*.

Make the frame parts first

1 Cut blanks for the legs (A) and rails (B) to size [**Materials List**, *page 64*].

2 Enlarge four copies each of the half-size leg, rail, and rest patterns on *page 64* to 200%. Spray adhesive onto the backs of the leg and rail patterns and adhere them to the blanks for the legs (A) and rails (B).

3 Form the mortises in the legs (A) and cut the tenons on the rails (B) [**Drawings 1**, **1a**; **Skill Builder**].

4 Bandsaw or scrollsaw the curve on the edge of each rail blank (B). Cut

PROJECT HIGHLIGHTS

- Overall dimensions: 13" wide × 8⅝" deep × 8¾" high.
- Materials needed: Maple, walnut. Other contrasting species, such as ash and mahogany or white oak and padauk, could be used.
- Holds six wine bottles.

slightly outside the line and sand to the line. Remove the patterns; then finish-sand the rails to 220 grit.

Assemble the frames

1 Apply glue to the rail (B) tenons; then assemble and clamp the rails and legs (A) with the curved edge of each rail facing up [**Drawing 1**, **Shop Tip**, *below*.] Lay the rails across a ¾" scrapwood spacer (we used MDF) so you can center the clamps on the legs. (The patterned face will be up for one leg, down for the other.)

2 Bandsaw or scrollsaw the curved edges of the legs (A). Cut slightly outside the line; then sand to the line.

3 Remove the patterns from the legs (A), and then finish-sand both frames (A/B) to 220 grit.

Time for some rests

1 Cut four ½×1¼×12¼" blanks for the rests (C).

2 Spray adhesive onto the back of each enlarged copy of the half-size rest pattern and adhere a pattern to each rest (C) blank.

3 Install a ¾" dado set on your tablesaw, and set the cutting depth to ¼". Saw dadoes in the rests (C), where indicated on the pattern.

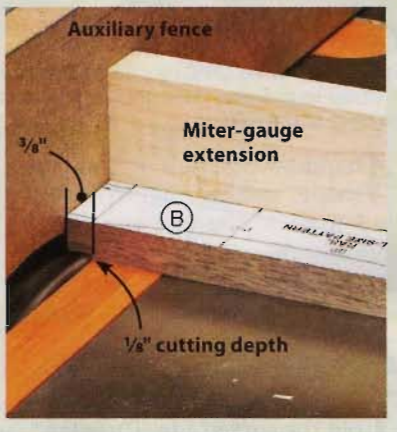
SKILL BUILDER

Drilling and sawing simplify mortise-and-tenon joinery

The sturdy, reliable mortise-and-tenon joint reigns as a woodworking standby. These hints will help you easily form mortises in the legs (A) and tenons on the rails (B) for the wine rack.

Mark the mortise locations from the pattern onto the adjacent edge of each leg blank. Position the drill-press fence to center a ¼" brad-point bit on the edge, shown at *right*, and drill a series of holes to the mortise depth, 7/16". Clean out the mortise and square the corners with ¾" and ¼" chisels.

To cut the rail tenons, shown at *lower right*, install a ½" dado set on your tablesaw, and lower it below the table surface. Attach an auxiliary rip fence, and position it for ⅜" cutting width. Add a miter-gauge extension that reaches the fence. Start the saw, and raise the dado set ⅛" above the table, cutting a cove in the auxiliary fence.



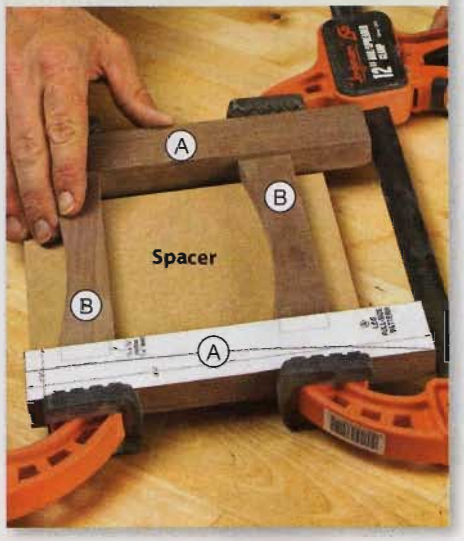
On scrap stock the same size as the rails, make cuts on both faces to cut the tenon cheeks. Keep the end of the rail tightly against the fence.

Then, using the same saw setup, stand the test piece on each edge to cut the tenon shoulders. Test the tenon fit in the mortises, and adjust the setup as needed. Then cut the tenons on both ends of the four rails.

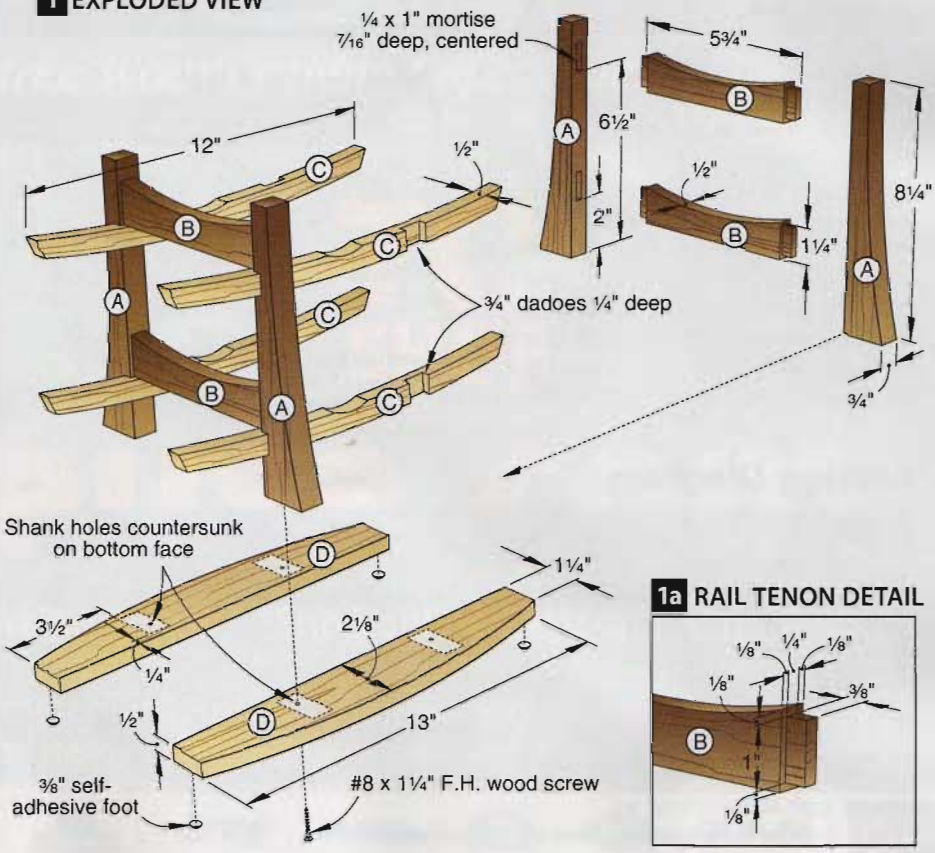
SHOP TIP

Clamp first, saw second

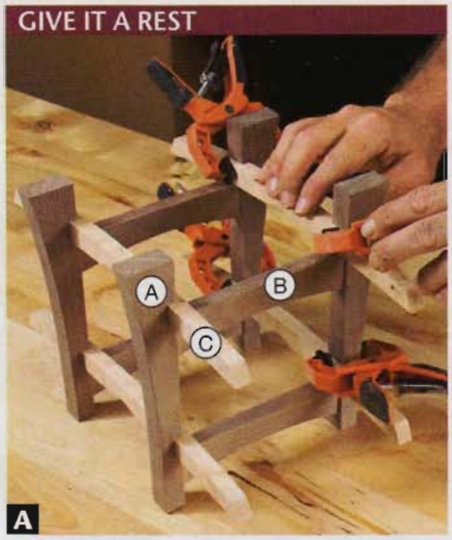
Clamping curved parts poses difficulties: You usually end up having to tape the cut-off piece back onto the workpiece to provide a clamping surface. For such assemblies as the wine-rack frames (A/B), glue and clamp the components before you cut the curves in the legs (A).



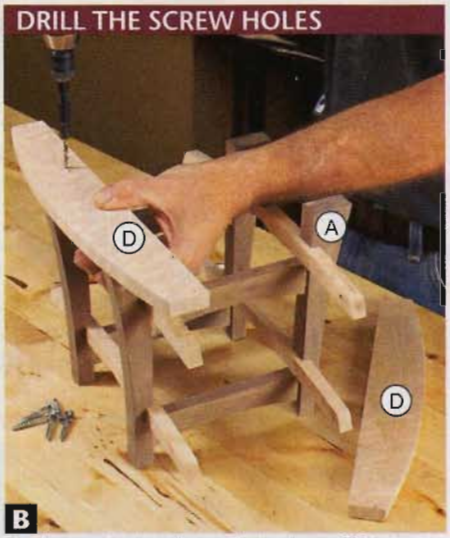
1 EXPLODED VIEW



1a RAIL TENON DETAIL



Stand the frames (A/B) upside down to make it easier to position the rests (C) against the bottom of the rails (B).



Drill screw holes through the base (D) into the legs (A) with a countersink bit and portable drill.

4 Bandsaw or scrollsaw the rests (C) to shape, cutting slightly outside the line. Sand to the line and remove the patterns; then finish-sand the rests.

5 Glue and clamp the rests (C) to the frames (A/B) [**Drawing 1, Photo A**].

Add the bases

1 Cut the base (D) blanks to size. Lay out the curved edge [**Drawing 1**] with a fairing stick by drawing a line that connects the two endpoints and the centerpoint. (For a free fairing stick plan, go to woodmagazine.com/fairing.)

2 Bandsaw or scrollsaw the edge of each base (D) slightly outside the line; then sand to the line. Finish-sand the bases to 220 grit.

3 With the rack assembly (A/B/C) upside down, center the bases side-to-side on the bottoms of the legs (A) and overhanging the backs of the legs by ¼" [**Drawing 1**]. Mark screw locations centered on the legs; then drill countersunk shank holes in the bases (D) and pilot holes into the legs [**Photo B**]. (For #8 screws, drill 5/32" shank holes and 7/64" pilot holes.)

4 Glue and screw the bases (D) to the rack assembly (A/B/C).

5 After the glue cures, touch up the finish-sanding as necessary and apply three coats of clear, satin finish, sanding to 320-grit between coats. While the finish dries, raise a glass of wine to your succcess.

Written by **Larry Johnston** with **Jeff Mertz**
Project design: **Jeff Mertz**
Illustrations: **Roxanne LeMoine; Lorna Johnson**

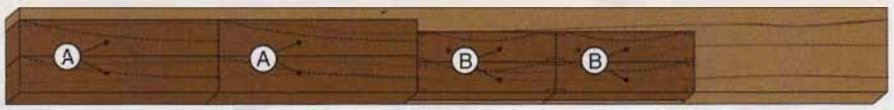
Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
A	legs	¾"	1½"	8¼"	W	4
B	rails	½"	1¼"	5¾"	W	4
C*	rests	½"	1 1/16"	12"	M	4
D	bases	½"	2⅛"	13"	M	2

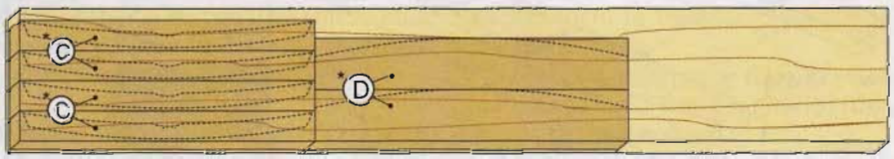
*Parts initially cut oversize. See the instructions.

Materials key: M–maple, W–walnut.
Supplies: Spray adhesive; #8×1¼" flathead wood screws, ⅜" self-adhesive feet (4).
Blade: dado set.

Cutting Diagram

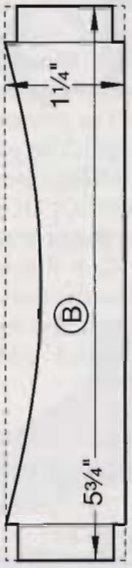


¾ x 3½ x 36" Walnut (1 bd. ft.)

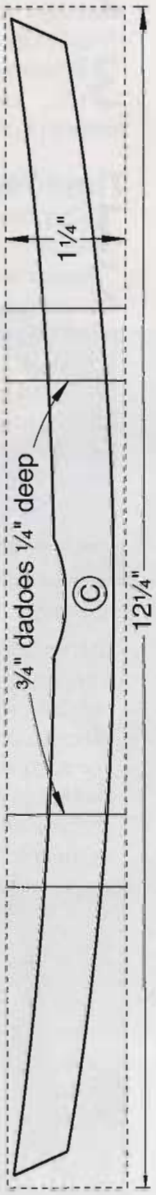


¾ x 5½ x 36" Maple (1.5 bd. ft.)
*Plane or resaw to the thickness listed in the Materials List.

NOTE: Enlarge these half-size patterns to 200% on a photocopier to make full-size patterns for the legs (A), rails (B), and rests (C).



Ⓑ
RAIL HALF-SIZE PATTERN
(4 needed)



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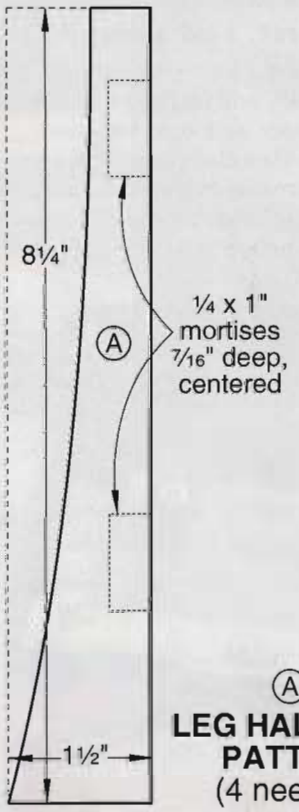

Ⓐ
LEG HALF-SIZE PATTERN
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Dressy Dresser Mirror

Graceful styling and simple construction combine to make this wall mirror a quick and satisfying project. It matches the dresser on *page 34*, but will fit into many decorating schemes.

PROJECT HIGHLIGHTS

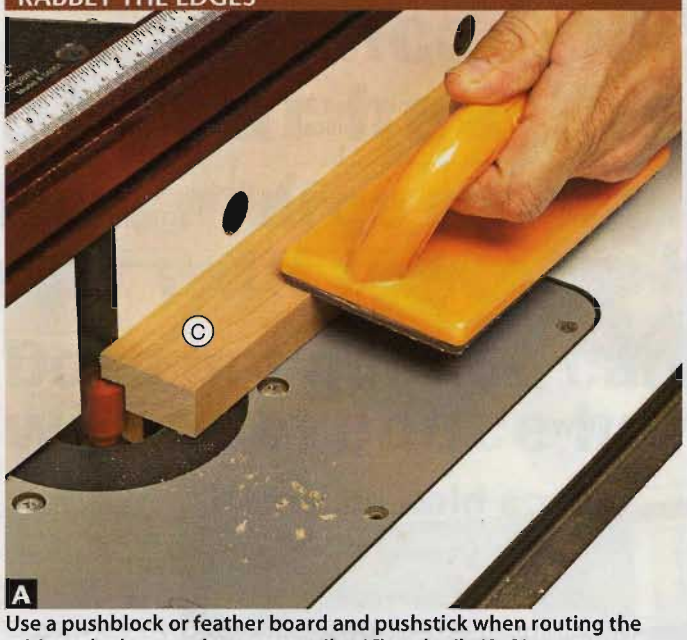
- Overall dimensions are 28" wide × 1⅜" deep × 19½" high.
- Materials needed: ¾" cherry and ¼" hardboard.
- Styled to match the dresser (*page 34*), valet (*page 41*), lingerie chest (issue 189), and pencil-post bed and nightstand (issue 187).

Make the rails and stiles

1 Cut the lower rail (A), upper rail (B), and stiles (C) to size [**Materials List**, *page 68*].

2 Form the ⅜" rabbets at both ends of the lower rail (A) and upper rail (B) [**Drawing 1, Skill Builder**].

RABBET THE EDGES



Use a pushblock or feather board and pushstick when routing the rabbeted edges on the narrow stiles (C) and rails (A, B).

MITER THE ENDS OF THE TOP

Attach a long extension to your miter gauge and cut it off at the 37° angle to help you align the top (D) for cutting the miters.

3 Using the same setup, rabbet the top back edge of the lower rail (A) and the inside back edges of the stiles (C) [**Drawings 1, 2; Photo A**].

4 Rabbet the bottom back edge of the upper rail (B) with multiple passes. Leave the cutting depth set as before, but move the fence after each pass until you reach 1⅛" wide [**Drawings 1, 2**].

Assemble the frame

1 Lay out the arch on the upper rail (B) [**Drawing 2**]. Mark the centerpoint where shown; then draw an arc through the ends and the centerpoint with a fairing stick. (For a free fairing stick plan, go to woodmagazine.com/fairing.)

2 Bandsaw the arc slightly outside the line, and then sand to the line.

3 Glue and assemble the lower rail (A), upper rail (B), and stiles (C) [**Drawing 2**]. Square the assembly, ensuring that the corners are flush; then clamp the corners [See **Shop Tip**, on *page 68*]. Add bar clamps across the assembly to pull the joints tight.

4 Finish-sand the mirror frame (A/B/C) to 220 grit.

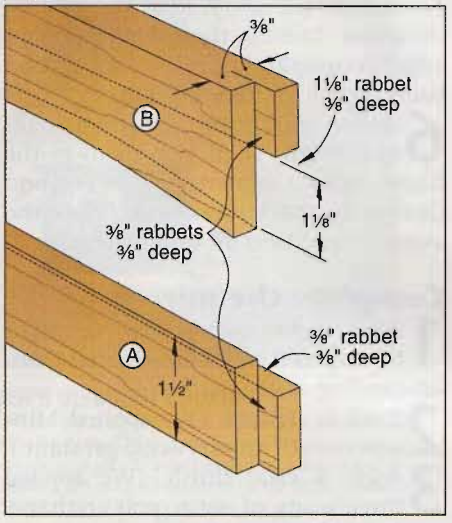
Add the top and base

1 Cut the top (D) and base (E) to size [**Drawing 2**].

2 Tilt your tablesaw blade to 37°, position the rip fence, and bevel-rip the front edge of the top (D) [**Drawings 2, 3**].

3 Reset the tablesaw blade to 0° and set the miter gauge to 37° to saw bevels on the ends of the top (D) [**Drawing 2,**

1 RAIL TENON DETAILS



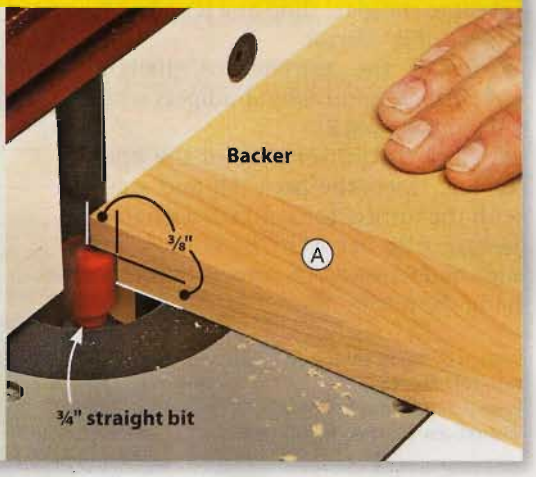
SKILL BUILDER

Routing renders rabbets readily

Instead of setting up your tablesaw with a dado blade when you have a few rabbets to make, turn to your table-mounted router. A ¾" straight bit chucked in a table-mounted router lets you form a rabbet of any width. (For rabbets wider than ¾", make multiple passes.) Or, you can buy piloted rabbet bits for common widths.

Raise or lower the router to adjust the rabbet depth. (For the mirror, set the depth to ⅜", half the thickness of the rails and stiles [A, B, C].) Position the fence to set the width of the rabbet. If you are using a piloted bit, align the face of the fence with the pilot bearing. (For the mirror, set the fence to make a rabbet ⅜" wide.) Test the setup with scrap stock before routing project parts.

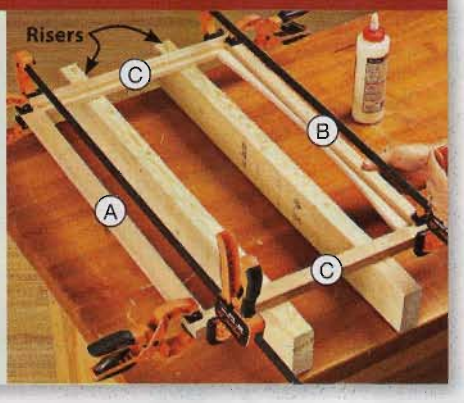
When routing across the grain, as on the ends of the rails (A, B), push the workpiece with a scrapwood backer (we used ¾×6×12" MDF) to prevent splintering the edge of the rail when the router bit exits, as shown at *right*.



SHOP TIP

Rise above clamping problems

Clamps often prevent laying an assembly, such as the mirror frame (A/B/C), flat for gluing. To keep the parts in the same plane, lay the assembly across risers, such as the pieces of 2×4 shown. When glue joints lie across the risers, put packing tape or waxed paper on the riser edges.



3 TOP BEVEL

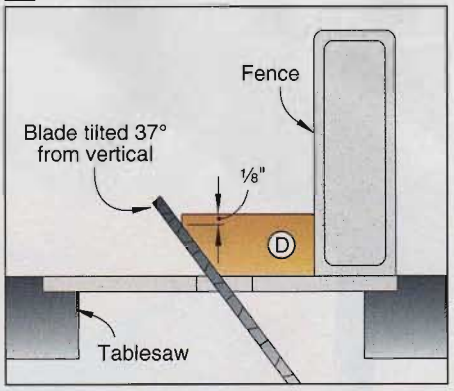


Photo B]. Leave a ⅛" face to match the front profile.

4 Chuck a ⅛" round-over bit in your table-mounted router, and position the fence flush with the pilot bearing on the bit. Round over both ends of the top (D), then the front, where shown [**Drawing 2**]. Use a scrapwood backer to prevent tear-out when routing the ends.

5 Change to a ⅜" round-over bit, and adjust the cutting depth and fence position as necessary. Rout the bottom (E) across the ends, then along the front edge [**Drawing 2**]. Again, use a scrapwood backer when routing the ends.

6 Finish-sand the top (D) and base (E) to 220 grit. Then glue them to the frame (A/B/C), centered end to end and flush at the back [**Drawing 2**]. Place the assembly on risers for easier clamping.

Complete the mirror

1 Sand slight round-overs to soften the exposed edges. Touch up the finish-sanding as necessary.

2 Stain as desired. (We applied Minwax no. 607 Cherrywood gel stain.)

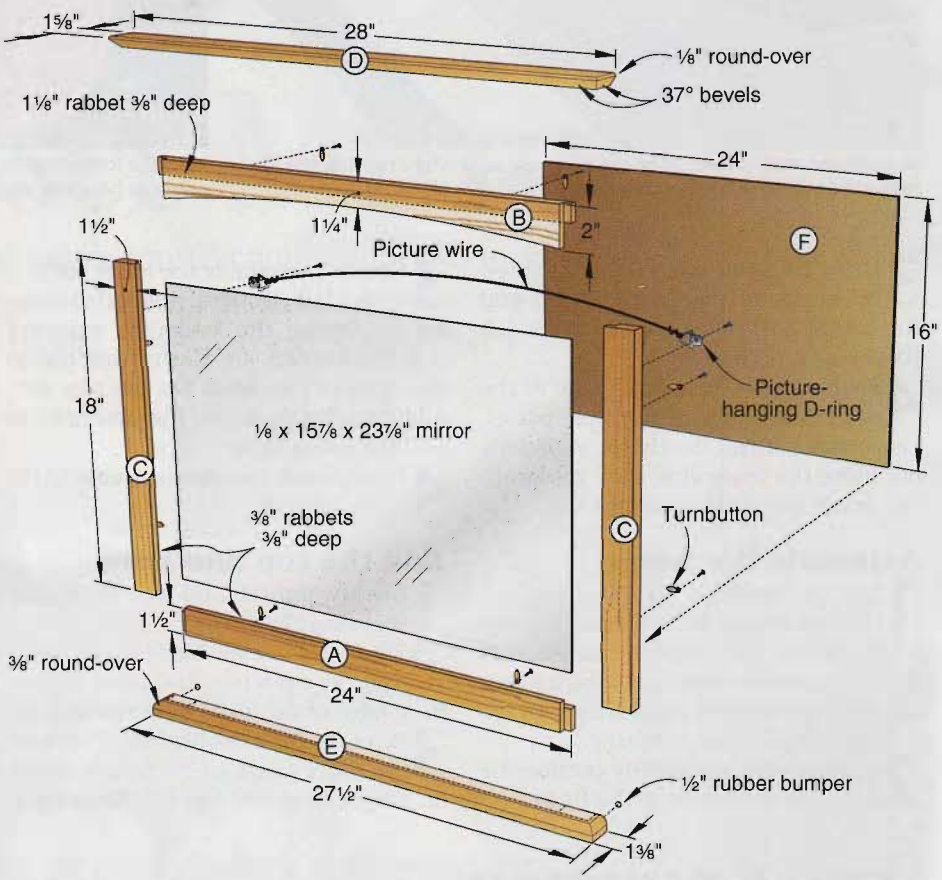
3 Apply a clear finish. (We applied three coats of satin polyurethane, sanding to 320 grit between coats.)

4 Cut the back (F) to size. Test-fit the back in the rabbeted opening; then take it to the glass shop as a template for a piece of ⅛" mirror.

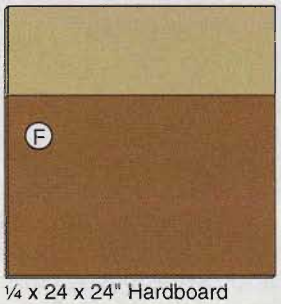
5 Install the turnbuttons, hanging D-rings, and rubber bumpers where shown [**Drawing 2**].

6 Place the mirror glass in the opening, insert the back (F), and secure with the turnbuttons. Attach a length of picture wire between the D-rings, and then reflect on your success while you hang the mirror.

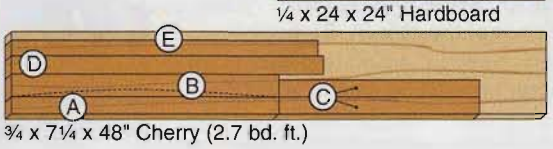
2 EXPLODED VIEW



Cutting Diagram



¼ x 24 x 24" Hardboard



¾ x 7¼ x 48" Cherry (2.7 bd. ft.)

Materials List

Part		FINISHED SIZE T	W	L	Matl.	Qty.
A	lower rail	¾"	1½"	24"	C	1
B	upper rail	¾"	2"	24"	C	1
C	stiles	¾"	1½"	18"	C	2
D	top	¾"	1⅝"	28"	C	1
E	base	¾"	1⅜"	27½"	C	1
F	back	¼"	16"	24"	H	1

Materials key: C-cherry, H-hardboard.
Supplies: Turnbuttons (8), ½" rubber bumpers (2), picture-hanging D-rings (2), picture wire, ⅛" mirror.
Router bits: ⅛" and ⅜" round-over bits, ¾" straight bit.

Written by **Larry Johnston** with **Jeff Mertz**
Project design: **Kevin Boyle**
Illustrations: **Roxanne LeMoine**

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AS HEARD ON PAUL HARVEY NEWS

New advanced portable heater can cut your heating bill up to 50%

Heats a large room in minutes with even heat wall to wall and floor to ceiling

Does not get hot, cannot start a fire and will not reduce humidity or oxygen

A new advanced quartz infrared portable heater, the EdenPURE™, can cut your heating bills by up to 50%.

You have probably heard about the remarkable EdenPURE™ as heard on Paul Harvey News and on television features across the nation.

The EdenPURE™ can pay for itself in a matter of weeks and then start putting a great deal of extra money in your pocket after that.

A major cause of residential fires in the United States is portable heaters. But the EdenPURE™ cannot cause a fire. That is because the quartz infrared heating element never gets to a temperature that can ignite anything.

The outside of the EdenPURE™ only gets warm to the touch so that it will not burn children or pets. Pets can sleep on it when it is operating without harm.

The advanced space-age EdenPURE™ Quartz Infrared Portable Heater also heats the room evenly, wall-to-wall and floor-to-ceiling. And, as you know, portable heaters only heat an area a few feet around the heater.

Unlike other heating sources, the EdenPURE™ cannot put poisonous carbon monoxide into a room or any type of fumes or any type of harmful radiation.

Q. What is the origin of this amazing heating element in the EdenPURE™?

A. This advanced heating element was discovered accidentally by a man named John Jones.

Q. What advantages does infrared quartz tube heating source have over other heating source products?

A. John Jones designed his heating source around the three most important consumer benefits: economy, comfort, and safety.

In the EdenPURE™ system, electricity is used to generate infrared light which, in turn, creates a very safe heat.

Never be cold again

Cannot start a fire; a child or animal can touch or sit on it without harm

After a great deal of research and development, very efficient infrared heat chambers were developed that utilize three unique patented solid copper heat exchangers in one EdenPURE™ heater.

Q. How can a person cut their heating bill by up to 50% with the EdenPURE™?

A. The EdenPURE™ will heat a room in minutes. Therefore, you can turn the heat down in your house to as low as 50 degrees, but the room you are occupying, which has the EdenPURE™, will be warm and comfortable. The EdenPURE™ is portable. When you move to another room, it will quickly heat that room also. This can drastically cut heating bills, in some instances, by up to 50%.

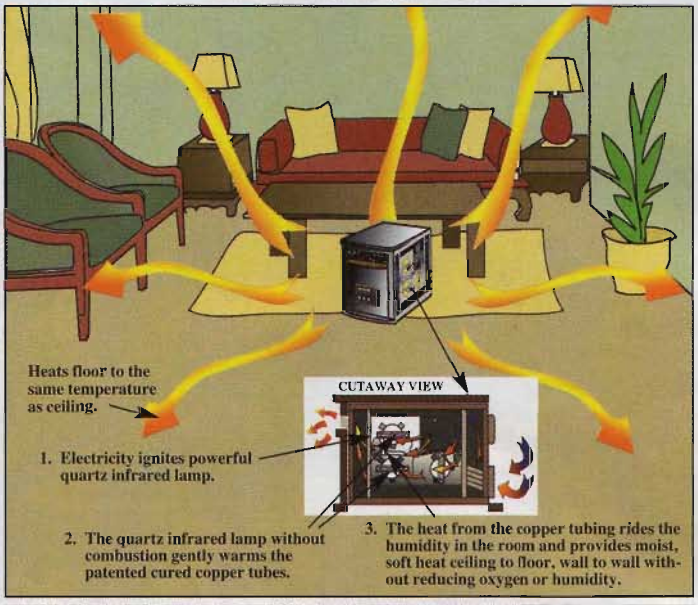
The EdenPURE™ comes in 2 models. GEN3 Model 500 heats a room up to 300 square feet and GEN3 Model 1000 heats a room up to 1,000 square feet.

End of interview.

The EdenPURE™ will pay for itself in weeks. It will put a great deal of extra money in a users pocket. Because of today's spiraling gas, oil, propane, and other energy costs, the EdenPURE™ will provide even greater savings as the time goes by.

Readers who wish can obtain the EdenPURE™ Quartz Infrared Portable Heater at a $75 discount if they order in the next 10 days. Please see the Special Readers Discount Coupon on this page. For those readers ordering after 10 days from the date of this publication, we reserve the right to either accept or reject order requests at the discounted price.

How it works:


Heats floor to the same temperature as ceiling.
CUTAWAY VIEW
1. Electricity ignites powerful quartz infrared lamp.
2. The quartz infrared lamp without combustion gently warms the patented cured copper tubes.
3. The heat from the copper tubing rides the humidity in the room and provides moist, soft heat ceiling to floor, wall to wall without reducing oxygen or humidity.

SPECIAL READER'S DISCOUNT COUPON

The price of the EdenPURE™ GEN3 Model 500 is $372 plus $17 shipping for a total of $389 delivered. The GEN3 Model 1000 is $472 plus $27 shipping and handling for a total of $499 delivered. People reading this publication get a $75 discount with this coupon and pay only $297 delivered for the GEN3 Model 500 and $397 delivered for the GEN3 Model 1000 if you order within 10 days. The EdenPURE™ comes in the decorator color of black with burled wood accent which goes with any decor. There is a strict limit of 3 units at the discount price - no exceptions please.

Check below which model and number you want:

☐ GEN3 Model 500, number _____ ☐ GEN3 Model 1000, number _____

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- To order by mail, by check or credit card, fill out and mail in this coupon.

This product carries a 60-day satisfaction guarantee. If you are not totally satisfied, your purchase price will be refunded. No questions asked. There is also a three year warranty.

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Check below to get discount:

☐ I am ordering within 10 days of the date of this publication, therefore I get a $75 discount and my price is only $297 for GEN3 Model 500 and $397 for GEN3 Model 1000 delivered.

☐ I am ordering past 10 days of the date of this publication, therefore I pay shipping and handling and full price totaling $389 for GEN3 Model 500 and $499 for GEN3 Model 1000.

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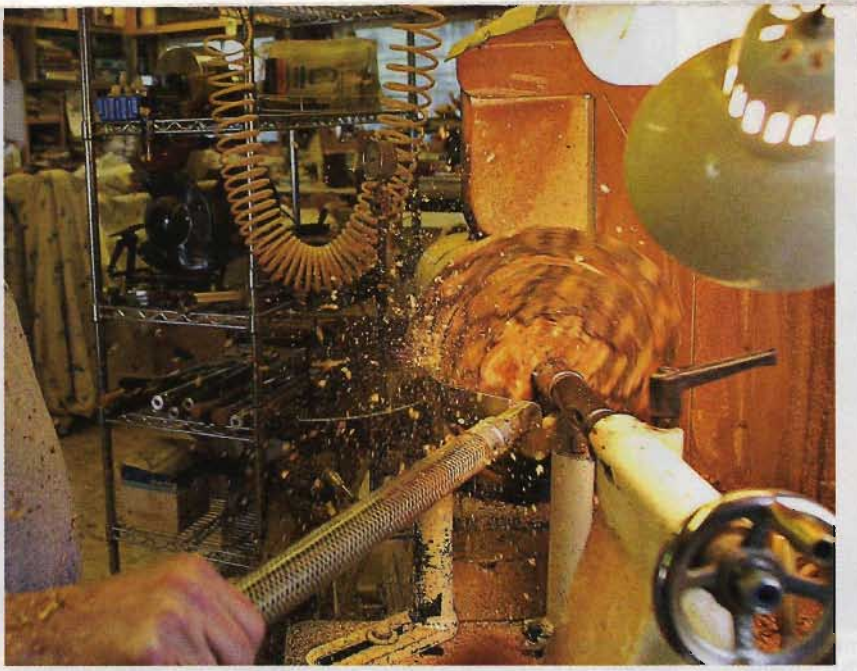
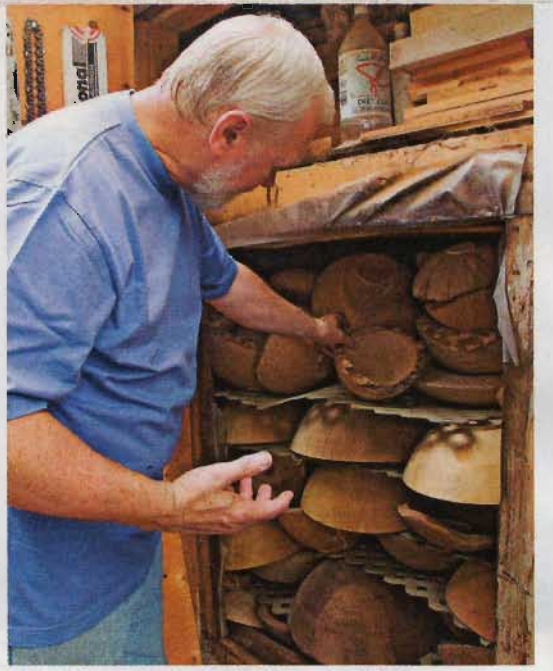
Turning Pro

After a successful career leap from the office to the workshop, Doug Magrath delivers advice for earning a living in woodworking.

Doug found a passion for turning, a sense of accomplishment, and an entirely new career in his wooden bowls.



To maximize his resources, Doug uses an Easy-Core pivoting tool that allows him to salvage the waste wood inside a bowl and turn those pieces as well.



Doug places about 300 bowls in this kiln for six to seven weeks, producing one-of-a-kind masterpieces.

It took 49 years, one bad trip to the bowling alley, and eight days in the hospital to convince Doug Magrath to trade his office job for woodturning. Now, he's a one-man business and a model for transforming a hobby into a moneymaking venture. The London, Ontario, woodworker turns one-of-a-kind wooden bowls, and his business, Forest City Woodturning, produces more than 1,000 bowls annually, retailing for $125–$400 each. The lessons Doug learned by going pro may help you decide whether—and how—to take the plunge.

Weighing a turning future

He never expected to become a successful artisan. Ten years ago, Doug was working as an accountant for a property-development company. One day, during a lunch-hour practice at a bowling alley, he felt a twinge in his side as he bent to tie his shoes. Next thing he knew, he was flat on his back in a hospital, having surgery to remove his appendix and a nonmalignant intestinal growth.

"At the time I was a chartered accountant, and I was burnt out," he says with a sigh. "Lying in bed for eight days in a row, all I could think was: 'It would be really great to do something I like.' " A hobby woodturner, he envisioned spending his days in the shop.

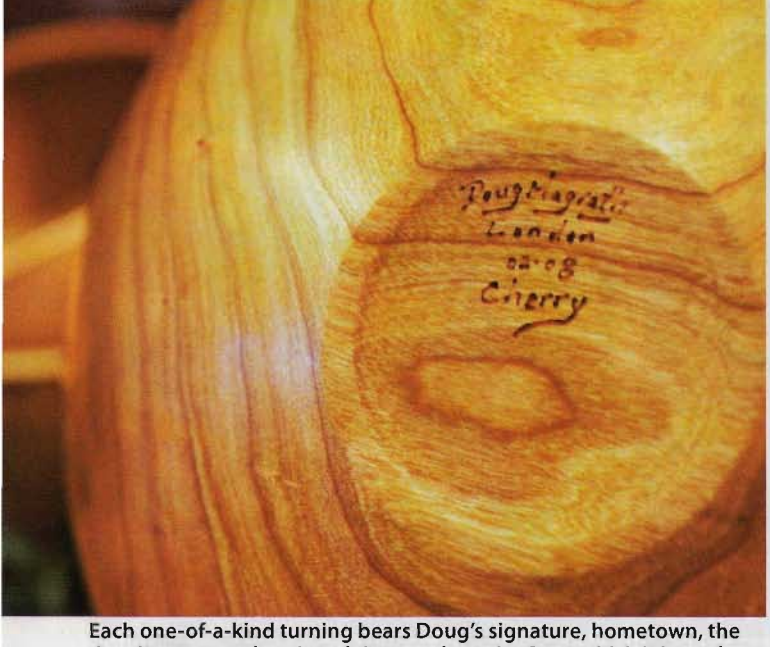
Doug's interest in woodturning actually stirred years earlier. While building an addition onto his house, he tinkered with his ShopSmith and tried using it as a lathe. "I took a slab of 2"-thick walnut, turned it into a really ugly bowl, and I thought, 'That's fun,'" Doug says, chuckling. But he'd been bitten by the bug, and soon he began turning gifts, such as bud vases, wine stoppers, and bowls, for family and friends, slowly refining his skills. He loved his hobby, but could he really make a living from it?

"Lying in bed for eight days in a row, all I could do was think: 'It would be really great to do something I like.' "

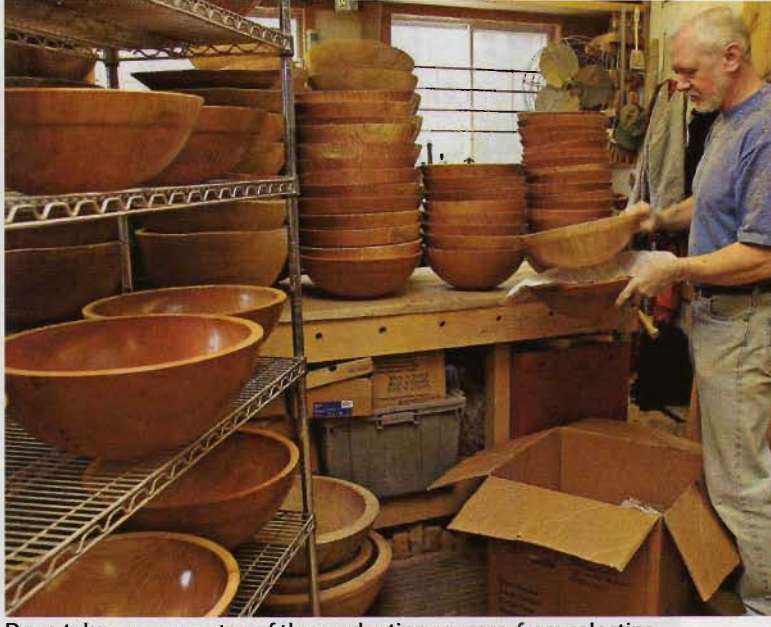
Doug took stock of his situation: He had a mortgage to pay and two children to support. Although he had no formal training, he felt passionate about turning and already owned a small lathe and all the tools he needed. His accounting practice had served him well, providing an understanding of how a successful—and unsuccessful—business operated. "The good thing about working as an accountant is you have to be familiar with all types of business to do an audit," Doug says. "You physically count inventory and get a good idea of most of the elements of an operating business."

He also took full advantage of his resources, drawing marketing and selling advice from his brother, Al Magrath, a director of marketing. He even met with noted bowl turner David Lancaster

To make his bowls profitable for retailers, Doug wholesales them at 50 percent of retail value. He also wholesales wood utensils made by his friend Tom Pinches.



Each one-of-a-kind turning bears Doug's signature, hometown, the date it was completed, and the wood species from which it is made.



Doug takes on every step of the production process, from selecting his wood to packaging and hand-delivering his finished products.

of South China, Maine, sharing with Lancaster his dream to become his "Canadian clone."

With all the cards on the table, Doug decided to take the plunge. He and his wife, Wendy, who was teaching at the time, agreed that he would take two years to make his woodturning business a success. Failing that, he could always return to work as an accountant.

Work your plan

Two scenarios for making the hobby-to-business leap stood before Doug. "You can keep doing what you want to do and figure out how to sell what you make, or you can find out what people want and decide if you want to make it," he says, matter-of-factly. Doug chose the second option: Find a need and fill it.

After examining David Lancaster's business model and determining that bowls would be a sought-after product, Doug simply needed a second opinion. Armed with sample bowls he'd created for family and friends, he approached a London retailer to gauge the market. The first thing she said was, "How soon can I get them?" he recalls.

"I quickly decided that the most enjoyment was in the making rather than the selling," he says. "When you're selling, you're not producing." If he planned to spend a majority of his time in the shop, he needed to leave the selling to someone else. So, rather than going on the craft-show circuit or making individual sales, Doug opted to sell his works wholesale.

Establishing his wholesale prices, however, posed its own challenge. "The hardest part in marketing is how to price your work when there's not a comparable product in the marketplace. I worked with the retailers on the price point that would work in their market," he explains.

With that figure in hand, and the goal to wholesale his bowls at 50 percent of the retail value, Doug had to make the ultimate decision: Could he live on that amount of money?

Doug divided his entire budget into quarters, allocating 25 percent of the wholesale price to material cost. "You can't spend more than that, or you will never make any money at it," Doug notes. Another 25 percent was flagged for overhead, such as insurance, tools, utilities, "and all the little things that you don't notice." Then, he calculated 25 percent for labor, and the final 25 percent for profit.

> "If you're only making enough to cover the labor but not the profit, then you aren't actually operating a business."

"If you're only making enough to cover the labor but not the profit, then you aren't actually operating a business. The tax department will tell you that as well," he adds.

Doug says he moved slowly in lining up retail customers: "I added one store at a time to be sure that I could keep up with demand." He built such a reputation for his work that William Ashley China in Toronto contacted him about selling his wares. Initially, he declined due to his relationship with a retailer just blocks away. "I don't compete with myself in the same market," he says. But when that retailer retired a few years later, Doug contacted William Ashley. The company was still interested, and his first shipment of about 25 bowls sold within two days. "They fly off the shelves," says Kara Guatto, an assistant buyer with William Ashley.

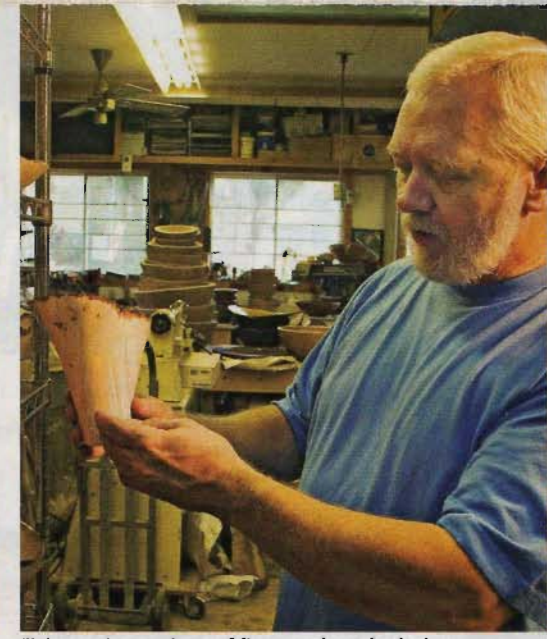
It all turned out fine

Turning about 1,000 functional bowls and 200 more decorative vessels each year, Doug has built his thriving business around quality and reliability.

"I just kept hearing about his wonderful bowls," says Jill Wilcox, owner of Jill's Table, a specialty retailer in London. "Now that I carry his bowls, they are our top sellers for special giving [weddings, anniversaries, and birthdays]. No two are alike. We consider them works of art."

In all, Doug personally supplies nine stores in southeastern Ontario, using his deliveries as an opportunity to get feedback directly from the retailers. "Whenever he arrives, we always say, 'We'll take all of them,' but of course, he still has other stores to deliver to," laughs Guatto, adding that William Ashley usually gets 20 to 30 bowls at a time. "Around the

Natural-edge bowls, like these two pieces, allow Doug to challenge his creativity. About one-sixth of his overall production currently consists of decorative pieces like these.



"It's putting a piece of firewood on the lathe and taking a piece of art off," Doug says.

Christmas season, we sold out of our entire stock in less than eight hours," she says.

High demand also allows for periodic price increases. Doug's 15" salad bowl began wholesaling at $75, with a retail price of $150. Today, it retails at $200. "I'd rather sell 10 bowls at a fair price than two at an outrageous price," Doug explains. "People won't pay gallery prices unless they're in a gallery."

Success also allows Doug to make time for decorative pieces. "I've reached the max of what I want to do with functional bowls," Doug says. While he currently produces about five times as many functional bowls as decorative bowls, he hopes to shift toward a 60-40 ratio.

Dedication to his craft has brought him closer to the satisfaction he longed for, lying in the hospital years ago. "As an accountant, I was solving other people's problems," he says. "You get home and think, 'Okay, what did I actually accomplish or do today?'"

A hobby-turned-business might be successful on paper, yet true success is in the eye of the beholder. "If you have other interests and the job demand pulls you away from what you want to do, that's unsuccessful in my mind," Doug says. "There is an old saying about being self-employed, that you work twice as hard, twice as long, for half as much, and it's true. But the satisfaction is a thousand times more for me," Doug shares. "At the end of the day, I look over at that rack and say, 'I made those today; I did that.'"

Written by **Megan Stotmeister** and **Mark Spowart**
Photographs: **Mark Spowart**

Lessons Learned

As Doug's story demonstrates, there's more to a woodworking business than just a love for the hobby. If you're considering going pro, here are the big ideas to take away:

Treat your business like a business

The key is isolating your expenses. If possible, supply your workspace with its own heating and power. Don't forget about separate insurance and taxes, either. If you need advice, see whether a business school or community college instructor can match you with a student who can help create a business model.

Select a sustainable product; deliver reliably

"In order to be accepted as a purveyor of goods to the retail trade, there has to be the business approach," Doug explains. The key word here is "business," not "hobbyist." Find a stable product and stick to it. Don't take on more work than you can handle, either. Deliver your products on schedule in the manner you'd expect from your suppliers.

Establish a price point

This is often the trickiest aspect of running a business: keeping prices low enough to stay competitive, yet high enough to make a profit. Calculate what it costs to make your product, what you can accept as payment, and then ask the retailers if they can sell it for twice that, Doug suggests. You'll quickly discover whether your business plan is feasible.

Use those resources

Although Doug had the business skills, he pulled marketing, pricing, and turning advice from outside resources. A wealth of advice is only a conversation away, so don't hesitate to ask family, friends, and mentors for help in their areas of expertise.

Give yourself a deadline

Starting a business is a bit of a gamble, so know when to quit. Doug gave himself two years to get Forest City Woodturning up and running, but if that failed, he had his former job to fall back on. Set a deadline and income projection from day one. If you're not generating a profit or even breaking even, move on to a more stable income.

Be mentally prepared

Transforming a hobby into a business requires commitment, long working hours, and often an income drop. Be prepared for a significant lifestyle change, and make sure all your family members are on board. Although you're bound to face frustrations along the way, don't forget to enjoy your passion.

Ask WOOD

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Splitter or riving knife–what's the difference?

Q: I'm preparing to purchase a tablesaw and have been researching the features of different models. What's the difference between a riving knife and a splitter?

—Jamie Zankel, Chesterfield, Va.

A: The goals of a riving knife, shown *right*, and a splitter, *below*, are the same, Jamie. Both sit behind the blade to prevent the two sides of a cut piece of wood from pinching or rotating into the blade. This, in turn, prevents the workpiece from kicking back at the operator.

However, a splitter typically doesn't change height, while a riving knife raises and lowers with the blade. Also, the top of a true riving knife stands just lower than the top of the blade, so it doesn't have to be removed for most non-through cuts such as dadoes, grooves, and rabbets.

Every tablesaw comes with a splitter (it holds up the blade guard), and you can add an aftermarket splitter, such as the one shown *bottom*, without a guard. Soon, riving knives will be just as common because Underwriters Laboratories (UL) made them a UL-listing requirement for new tablesaw models introduced since January 2008. Existing tablesaw models are grandfathered in until 2014, when they, too, will need riving knives for UL listing.

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Some splitters feature anti-kickback pawls for an added measure of safety.

continued on page 78

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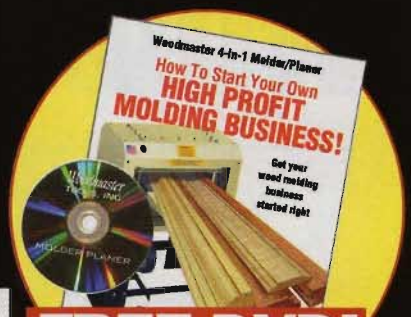

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Casters for picnic tables: Now you're on a roll

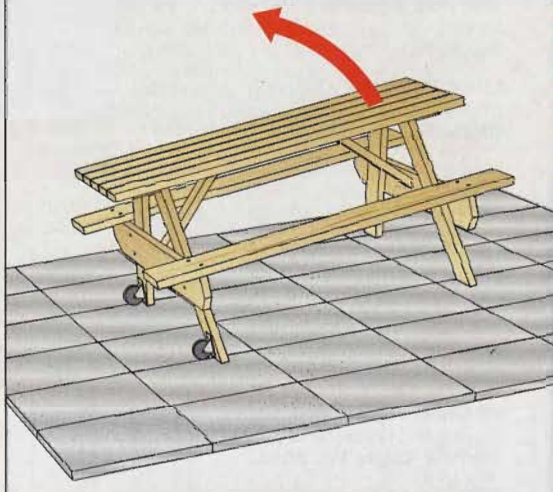
Q **The legs of my picnic table take a lot of abuse when someone moves it across the patio. What could I do to protect the legs?**

—Joe Ales, Pleasanton, Calif.

A A pair of carefully positioned casters should give your table's legs a break, Joe. (And we mean that in a good way.) You'll need a pair of fixed casters with wheels at least 4" in diameter. If you can find casters meant for outdoor use, that's all the better.

Then, find a point on the outside surface of the legs where the wheels have about ¼" clearance from the patio. Bolt the casters to the outsides of the table legs using washers and nuts on the opposite side.

To move the table, lift the end opposite the wheels until the wheels touch the patio, as shown *below*. Then just roll it where it needs to go.



Ask WOOD

Look ma! A no-clamps glue-up

Q **I've built small projects, such as a photo frame and a jewelry box, with delicate, difficult-to-clamp parts. Is there some fast-setting adhesive that will allow me to use hand pressure to clamp until the glue "grabs?"**

—Kevin deMarco, Round Rock, Texas

A Look to masking tape, Kevin. It makes a great helping hand for small-part glue-ups where clamps would be overkill or wouldn't find purchase.

On the other hand, if you need an excuse to add to your tool collection, you could invest in a 23-gauge pin nailer. These fine fasteners excel at delicate tasks, such as applying molding, and leave barely noticeable holes that virtually disappear when filled.

For small glue-ups, masking tape provides sufficient clamping pressure to hold your workpiece together while the glue sets.

continued on page 81

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Ask WOOD

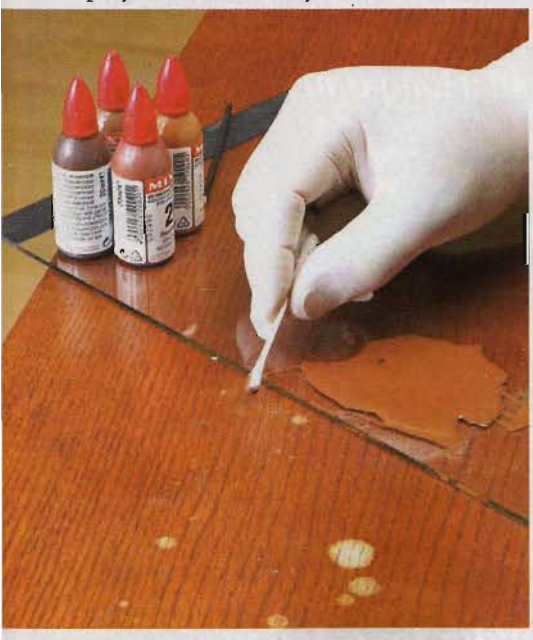
Spill strips toner finishes

Q. Without noticing, I spilled a few drops of home fragrance oil on our hall table. When my husband wiped up the oil the next morning, it lifted the finish down to bare wood. Please explain why this happened and how to fix it.

—Aprile Kohler, Des Moines, Iowa

A. The oil contains solvents that reacted with the table's finish, which was probably a type of lacquer, Aprile. Unlike varnish, lacquer can be dissolved even after it dries, and the oil had all night to work. You're seeing bare wood because it wasn't stained. Instead, the table was finished with a toner—a tinted film finish popular among furnituremakers. Toners make repairs harder because spraying toner on the entire surface darkens existing coats as it covers the bare spots.

If the table's finish comes close to matching a commercial stain, use that to touch up the damage, and seal the stain with varnish thinned 75 percent with mineral spirits. If not, make a touch-up toner by mixing pigments, such as Mixol (Woodcraft, 800-225-1153 or woodcraft.com), in ½-pound-cut shellac, as shown *below*, or in thinned varnish. To avoid future problems, cover your repairs and the entire tabletop with at least two coats of polyurethane or alkyd-resin varnish.



Mix pigments and shellac on a piece of scrap glass to determine the right color before dabbing it on.

continued on page 83

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Ask WOOD

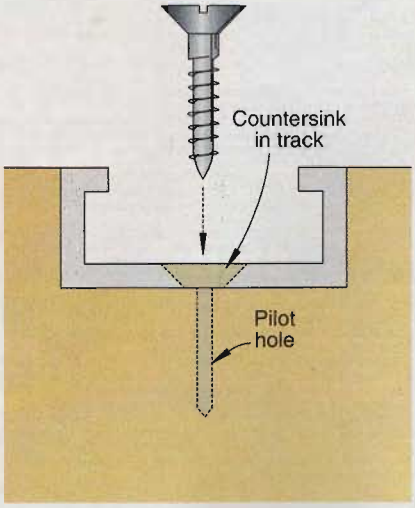
Countersinking feeling

Q: I like to use aluminum T-track in jigs and projects. However, I have a hard time countersinking the mounting screws. If I drill the countersink deep enough to seat the screwhead flush, do I risk enlarging the holes too much by countersinking into the stock?

—Rick Shields, Portland, Ore.

A: Don't worry about overenlarging the hole in your aluminum T-track, Rick. The metal-to-metal contact of the angled screwhead and the angled countersink bottom holds the track in place, not the shaft of the screw within the pilot hole.

To install a T-track, first clamp the track in place, making sure the top of the track is flush with the jig's surface. At the drill press, drill pilot holes through the track and into the jig; then countersink the screw holes with the track still clamped in place. We recommend single-flute countersinks (no. 06J50.20, $16.20 for two; Lee Valley Tools, 800-871-8158 or leevalley.com). These allow you to accurately center a smooth cut. Drill until the upper diameter of the countersink matches the diameter of the screwhead, as shown *below*. That may mean the tip of the countersink bit cuts through the track and into the jig, but this shouldn't create a problem; there will still be plenty of material for the screwhead to grab. Just be certain you center the countersink over the pilot hole.



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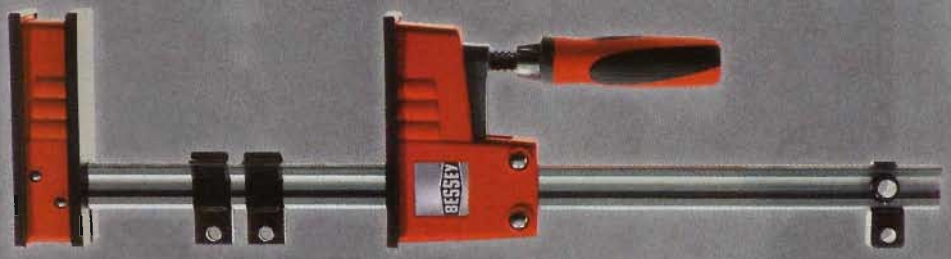

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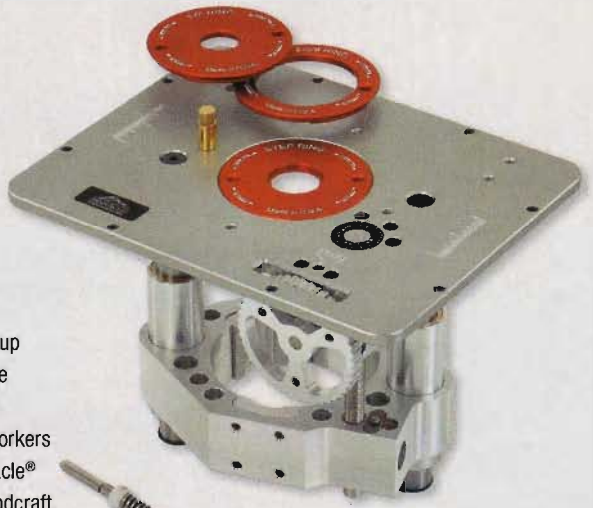

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Not applicable
13. Publication Title: Better Homes and Gardens® WOOD
14. Issue Date for Circulation Data Below: November 2008
15. Extent and Nature of Circulation

	Average No. Copies Each Issue During Preceding 12 Months:	No. Copies of Single Issue Published Nearest to Filing Date
a.	Total Number of Copies (Net Press Run):	644,000
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c.	Total Paid and/or Requested Circulation (Sum of 15b (1), (2), (3), and (4)):	532,269
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f.	Total Distribution (Sum of 15c and e):	535,660
g.	Copies not Distributed (See Instructions to Publishers #4 (page #3)):	108,340
h.	Total (Sum of 15f and g):	644,000
i.	Percent Paid and/or Requested Circulation (15c divided by f times 100):	99.37%

	Average No. Copies Each Issue During Preceding 12 Months:	No. Copies of Single Issue Published Nearest to Filing Date
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f.	Total Distribution (Sum of 15c and e):	534,931
g.	Copies not Distributed (See Instructions to Publishers #4 (page#3)):	108,522
h.	Total (Sum of 15f and g):	643,453
i.	Percent Paid and/or Requested Circulation (15c divided by f times 100):	99.37%

16. Publication of Statement of Ownership for a Requester Publication is required and will be printed in the December/January 2009 issue of this publication.
17. Signature and Title of Editor, Publisher, Business Manager, or Owner: Jeff Stiles, Business Manager. Date: 08/25/08. I certify that all information furnished on this form is true and complete. I understand that anyone who furnishes false or misleading information on this form or who omits material or information requested on the form may be subject to criminal sanctions (including fines and imprisonment) and/or civil sanctions (including civil penalties).

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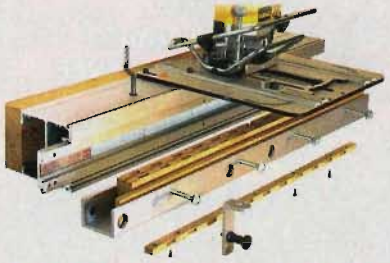

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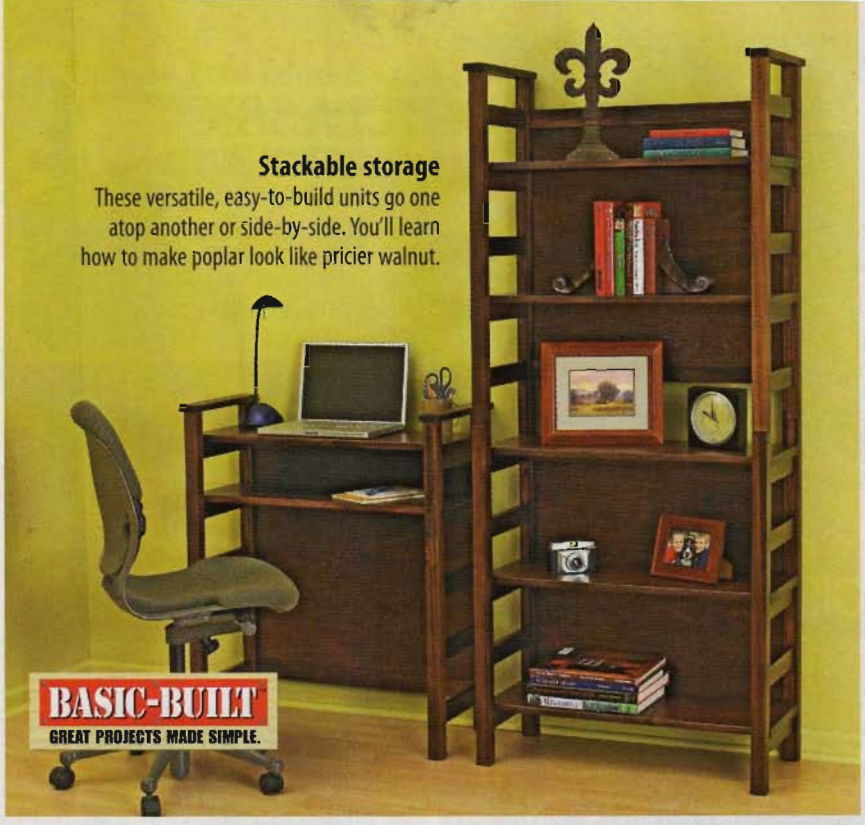
What's Ahead

A sneak peek inside the March 2009 issue (on sale January 13, 2009)

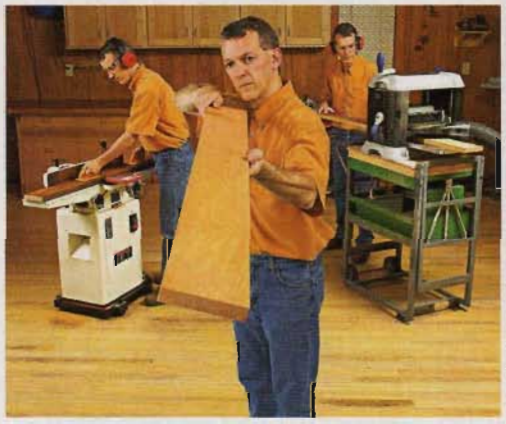
Lingerie chest

Practical and beautiful, this lithe seven-drawer chest completes the Shaker-style bedroom set that started with the pencil-post bed in the November 2008 issue.



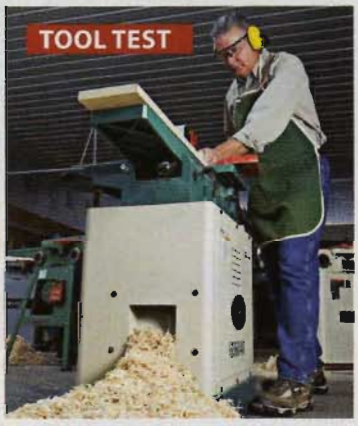
Stackable storage

These versatile, easy-to-build units go one atop another or side-by-side. You'll learn how to make poplar look like pricier walnut.



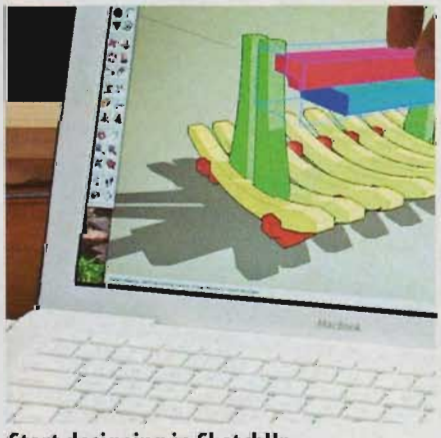
No-fail routines for jointing and planing

Learn time-proven techniques for machining rough-sawn lumber and even warped, cupped boards into flat, square project stock of consistent thickness.



6" jointers

Our test of 10 mid-priced models with three types of cutterheads uncovers the machine that will work best in your shop.



Start designing in SketchUp

Google's free, easy-to-use design software sets your creativity ablaze. See how you can visualize and refine projects before even setting foot in the shop.

Add slatwall tool and accessory storage

Use these tough and affordable wall panels and heavy-duty hardware to devise a storage system that keeps pace with your changing shop needs.

6 essential machinery setup tools

Can these affordable tools really improve your woodworking? We think so. Discover which shop aids belong in every woodworker's tool kit.

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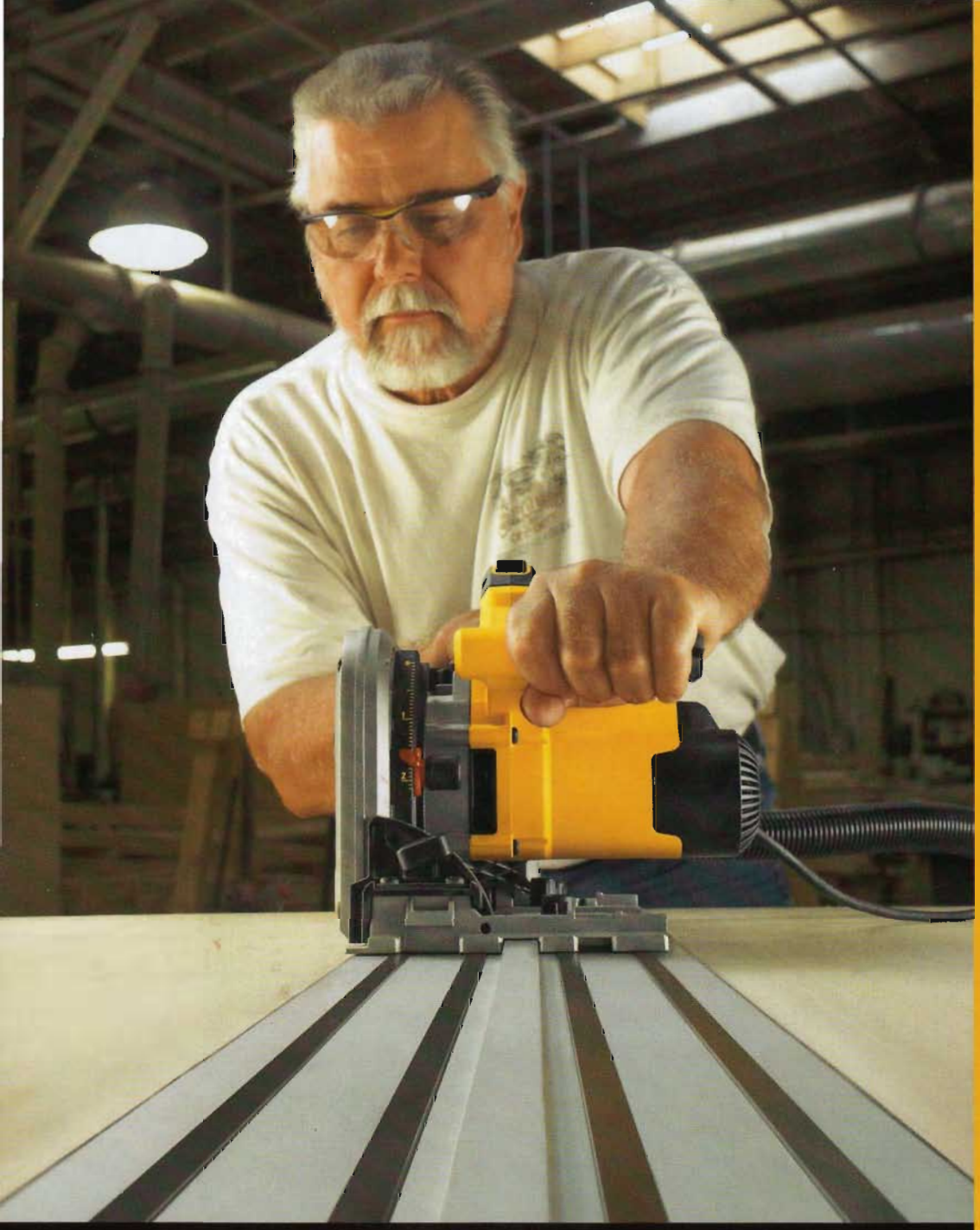

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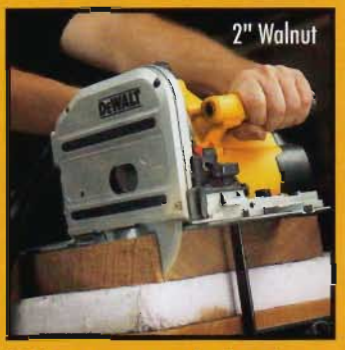

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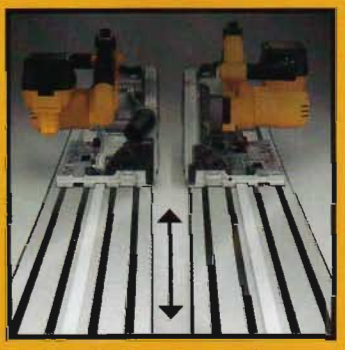

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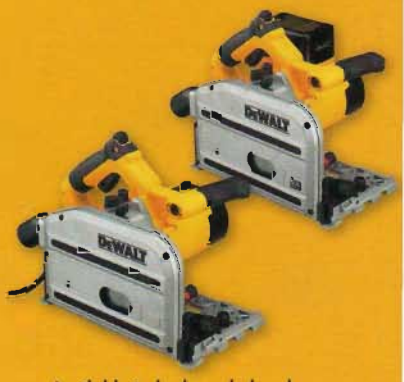

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